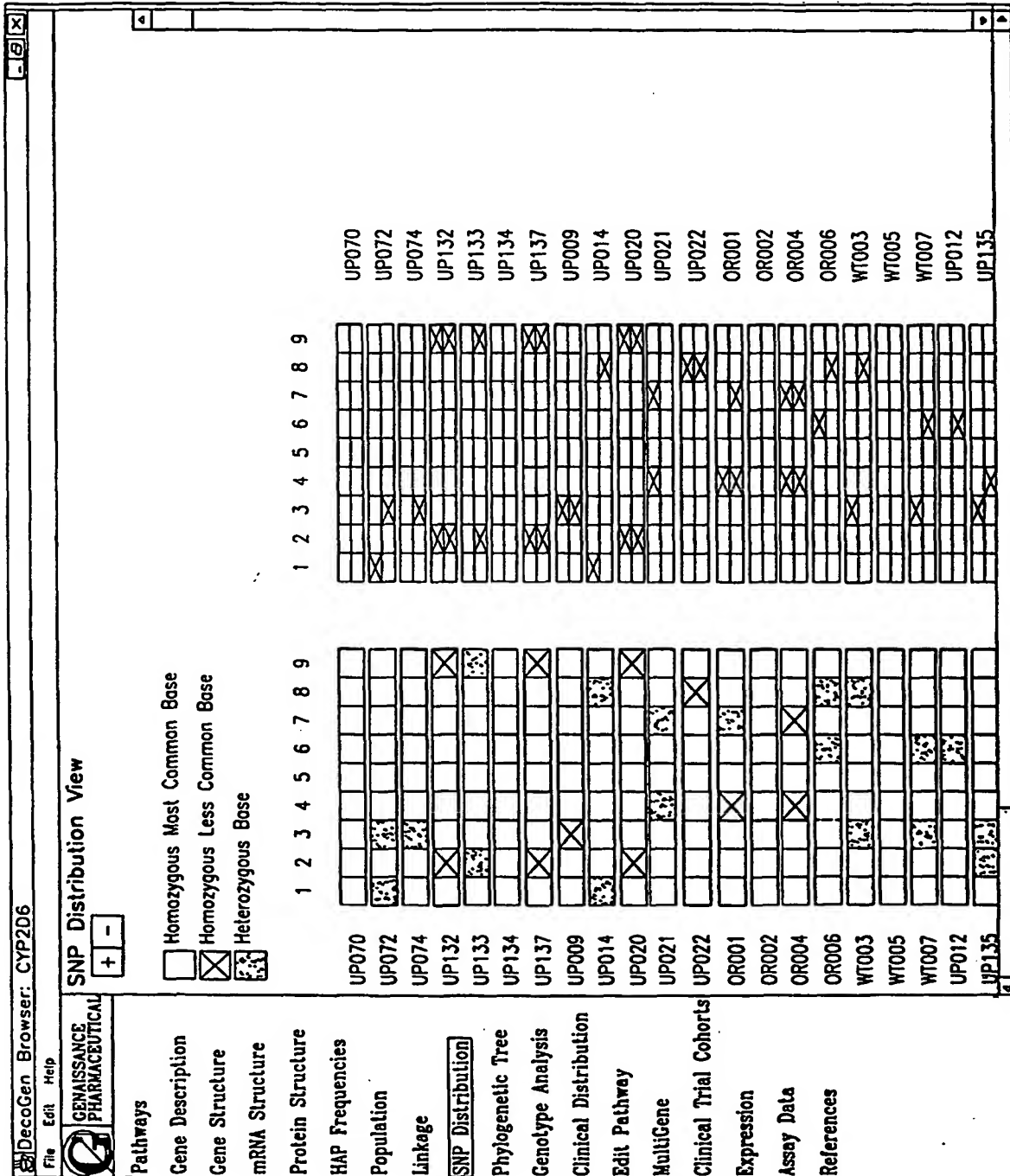


11 / 62

FIG. 9



10/6/77



13/62

FIG. II

DecoGen Browser: CYP2D6

File Edit Help

GENAISSANCE PHARMACEUTICAL

Pathways

Gene Description

Gene Structure

mRNA Structure

Protein Structure

HAP Frequencies

Population

Linkage

SNP Distribution

Phylogenetic Tree

Genotype Analysis

Clinical Distribution

Edit Pathway

MultiGene

Clinical Trial Cohorts

Expression

Assay Data

References

Haplotype Frequency vs. Ethnicity View

+ - Recalculate View Summary

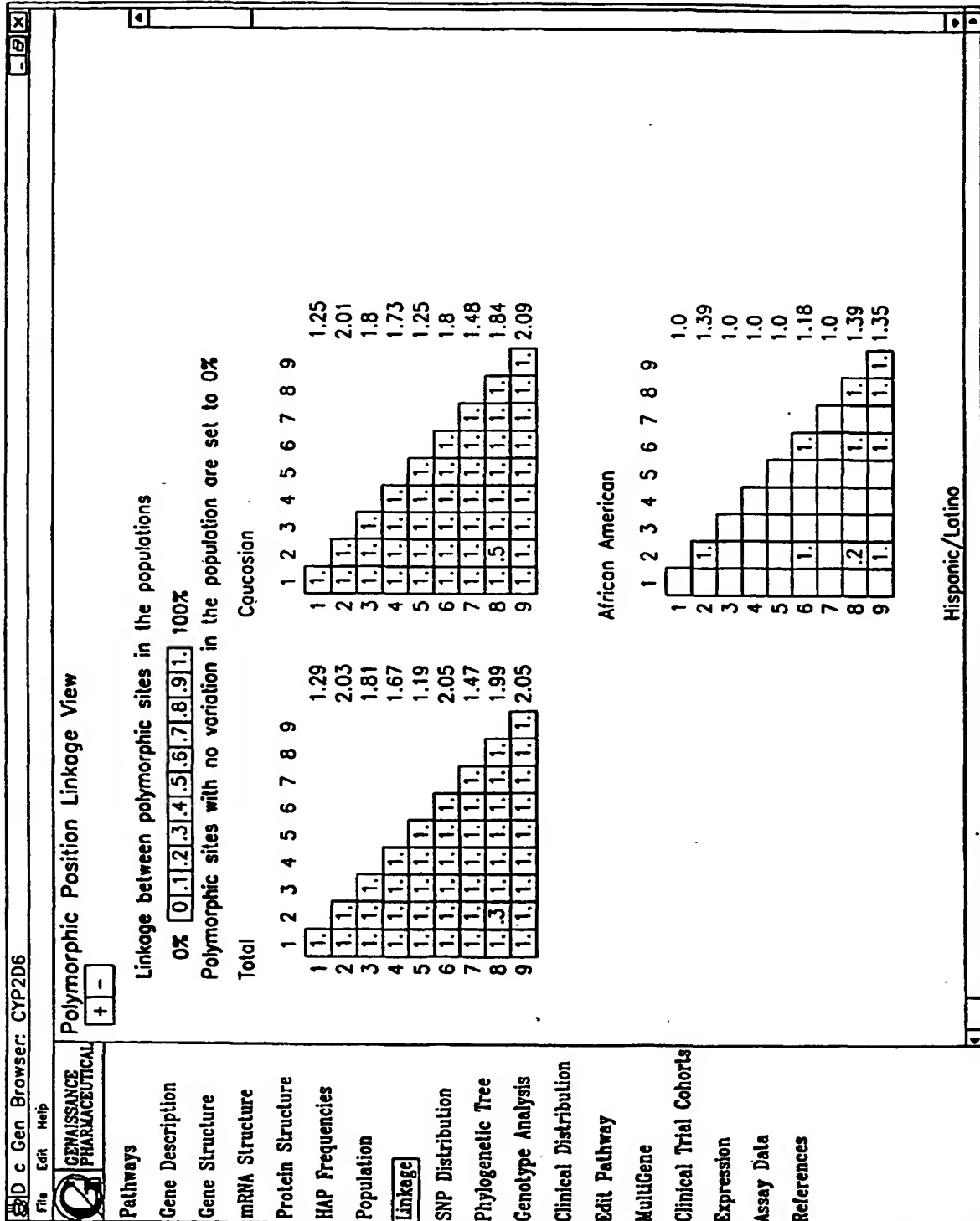
Polymorphism: ☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☒ 8 ☐ 9

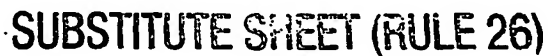
Details of the ethnic distribution as a function of subject haplotypes

3 Columns are given for each Ethnogeographic group:
Total number sampled with HAP pair
Fraction of the ethnogeographic group with that HAP pair
Fraction expected under Hardy-Weinberg equilibrium for that HAP pair

HAP 1	HAP 2	N	%Pop.	Caucasian	African American	Hispanic/Latino	As
*C*****G*	*C*****G*	23	50%	18.56.3% 37.9%	0 0.0% 0.6%	0 0.0% 0.0%	5
*T*****G*	*C*****G*	2	4%	2 6.3% 18.9%	0 0.0% 2.4%	0 0.0% 0.0%	0
*T*****G*	*T*****G*	4	8%	4 12.5% 2.4%	0 0.0% 2.4%	0 0.0% 0.0%	0
*C*****A*	*C*****G*	5	10%	4 12.5% 25.2%	0 0.0% 2.4%	0 0.0% 0.0%	1
*C*****A*	*C*****A*	3	6%	3 9.4% 4.2%	0 0.0% 2.4%	0 0.0% 0.0%	0
*T*****A*	*C*****G*	1	2%	0 0.0% 3.2%	1 12.5% 9.5%	0 0.0% 0.0%	0
*T*****A*	*T*****G*	2	4%	0 0.0% 0.8%	2 25.0% 18.9%	0 0.0% 0.0%	0
*T*****A*	*C*****A*	3	6%	1 3.1% 1.1%	2 25.0% 18.9%	0 0.0% 0.0%	0
*T*****A*	*T*****A*	3	6%	0 0.0% 0.1%	3 37.5% 37.9%	0 0.0% 0.0%	0

FIG. 12





16 / 62

FIG. 14

DecoGen Br wser: CYP2D6

File Edit Help

GENAISSANCE PHARMACEUTICAL

Pathways

Gene Description

Gene Structure

mRNA Structure

Protein Structure

HAP Frequencies

Population

Linkage

SNP Distribution

Phylogenetic Tree

Genotype Analysis View

Genotype Analysis

Clinical Distribution

Edit Pathway

MultiGene

Clinical Trial Cohorts

Expression

Assay Data

References

Polymorphism: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☒ 8 ☐ 9

Genotype Loci: ☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☒ 8 ☐ 9

I(HAP): 1.0 1.56 1.0 1.0 1.0 1.0 1.0 1.6 1.0

Recalculate View Optimized

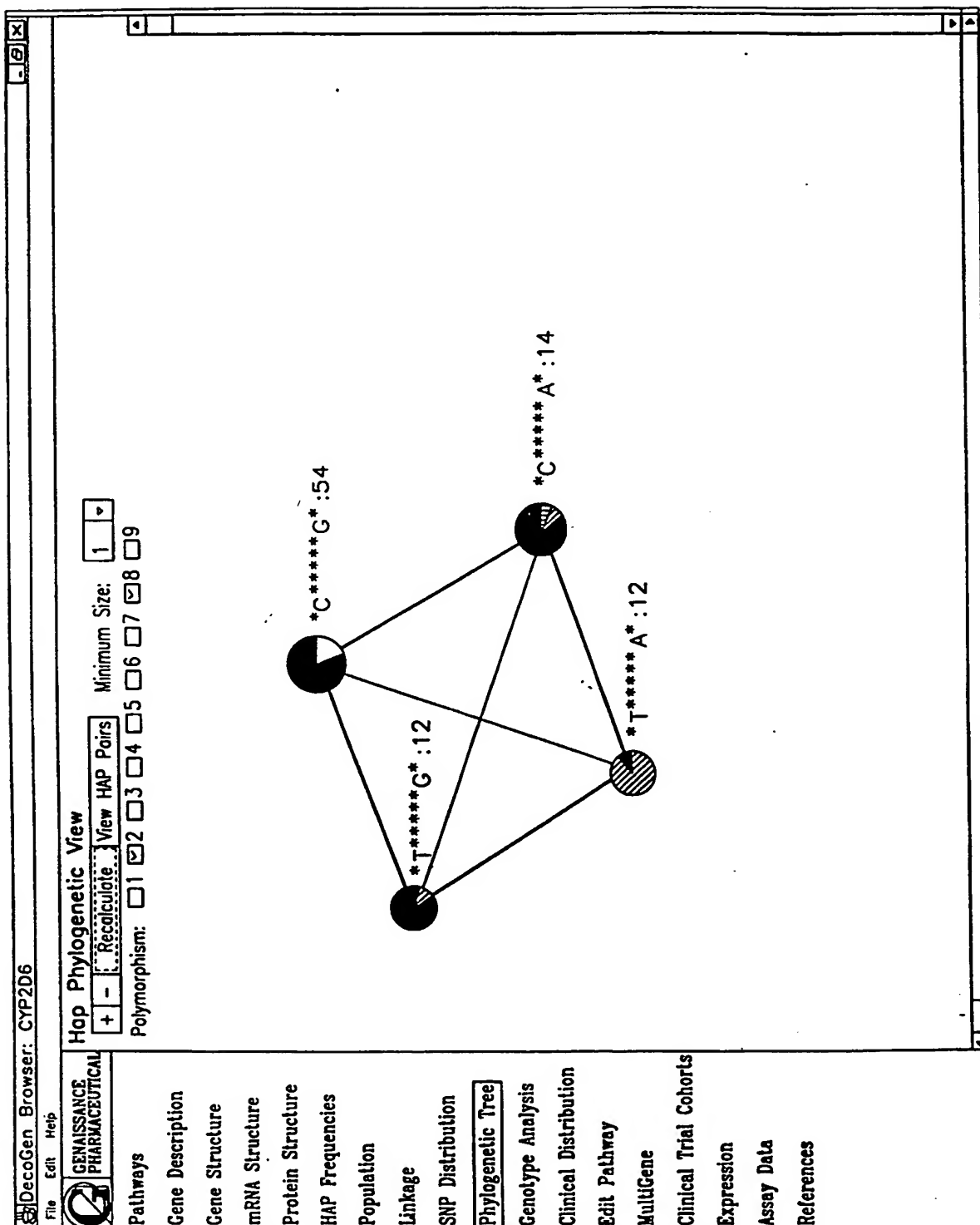
HAP 1	HAP 2	N	%Pop.	Positive
*C*****G*	*C*****G*	23	50%	100%
*T*****G*	*C*****G*	2	4%	100%
*T*****G*	*T*****G*	4	8%	100%
*C*****A*	*C*****G*	5	10%	100%
*C*****A*	*C*****A*	3	6%	100%
*T*****A*	*C*****G*	1	2%	100%
*T*****A*	*T*****G*	2	4%	100%
*T*****A*	*C*****A*	3	6%	100%
*T*****A*	*T*****A*	3	6%	100%

Fig. 15

SUBSTITUTE SHEET (RULE 26)

18 / 62

FIG. 16



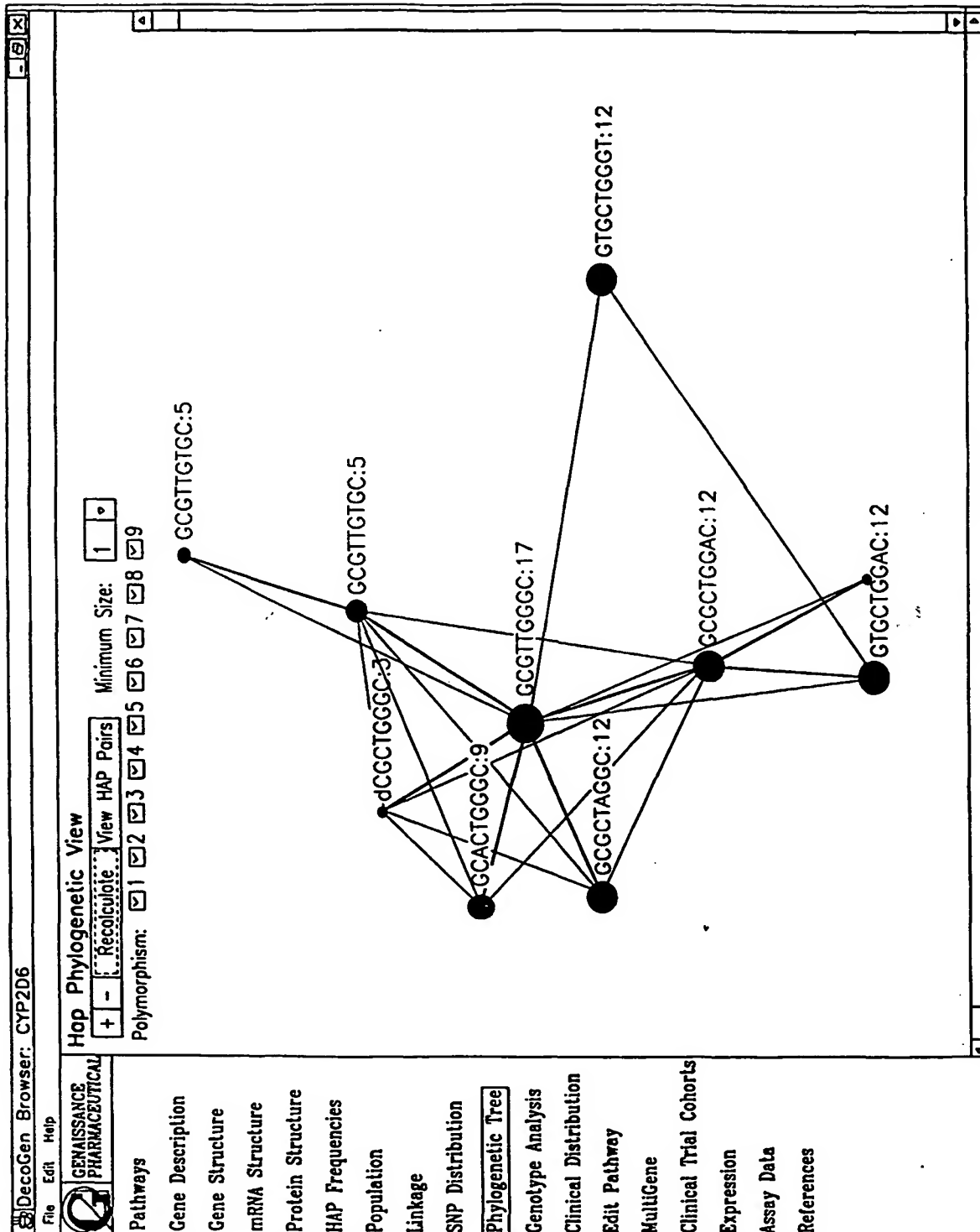
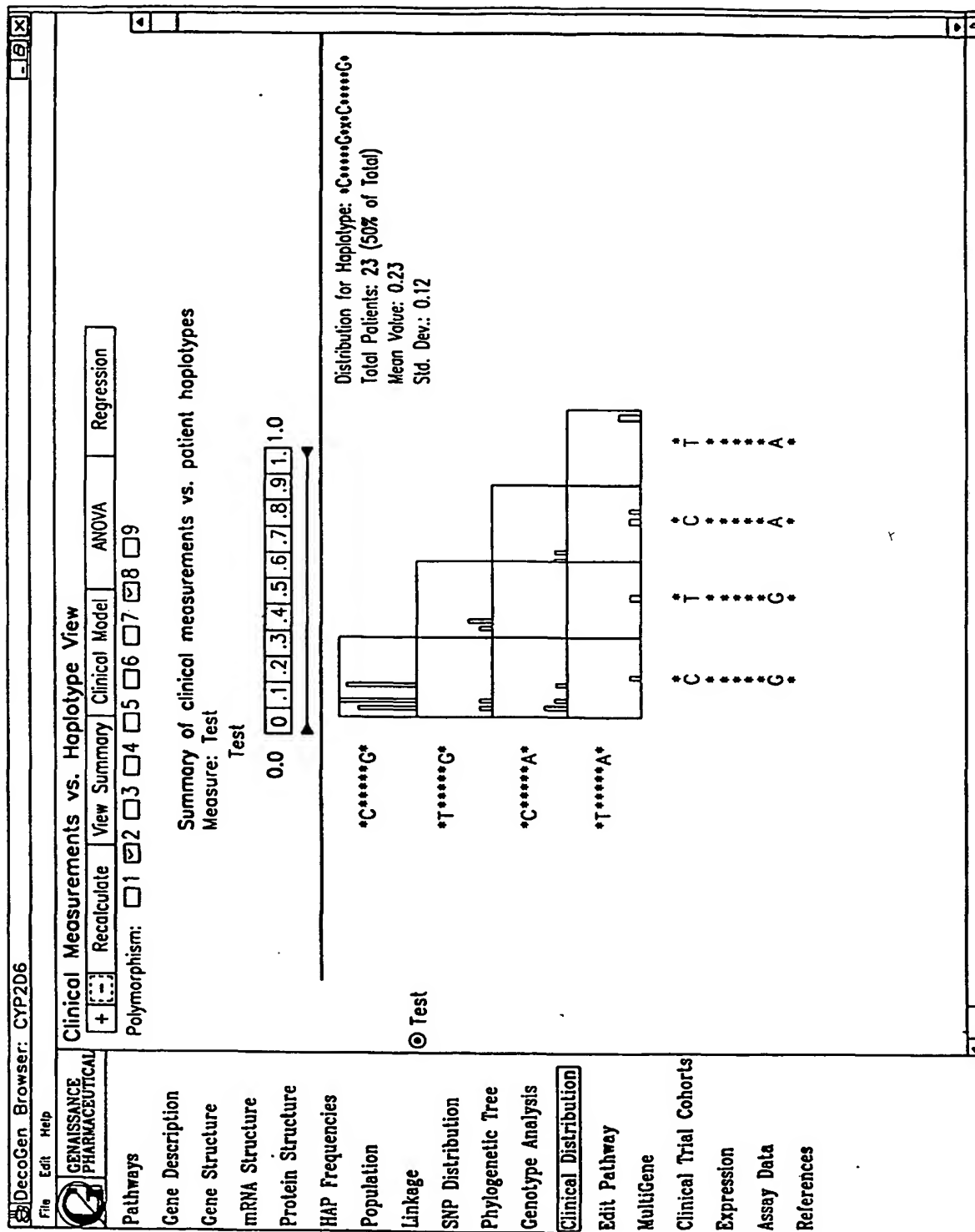


Fig. 18



21 / 62

FIG. 19



22 / 62

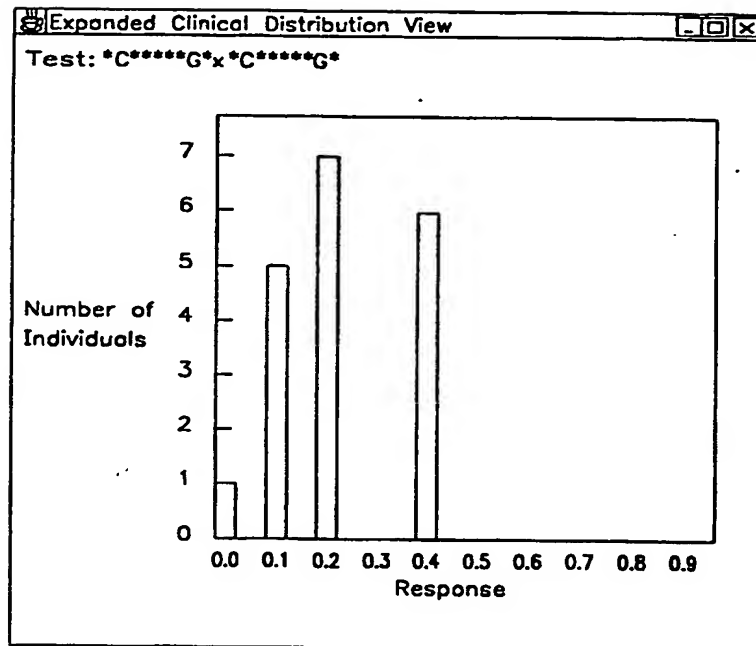
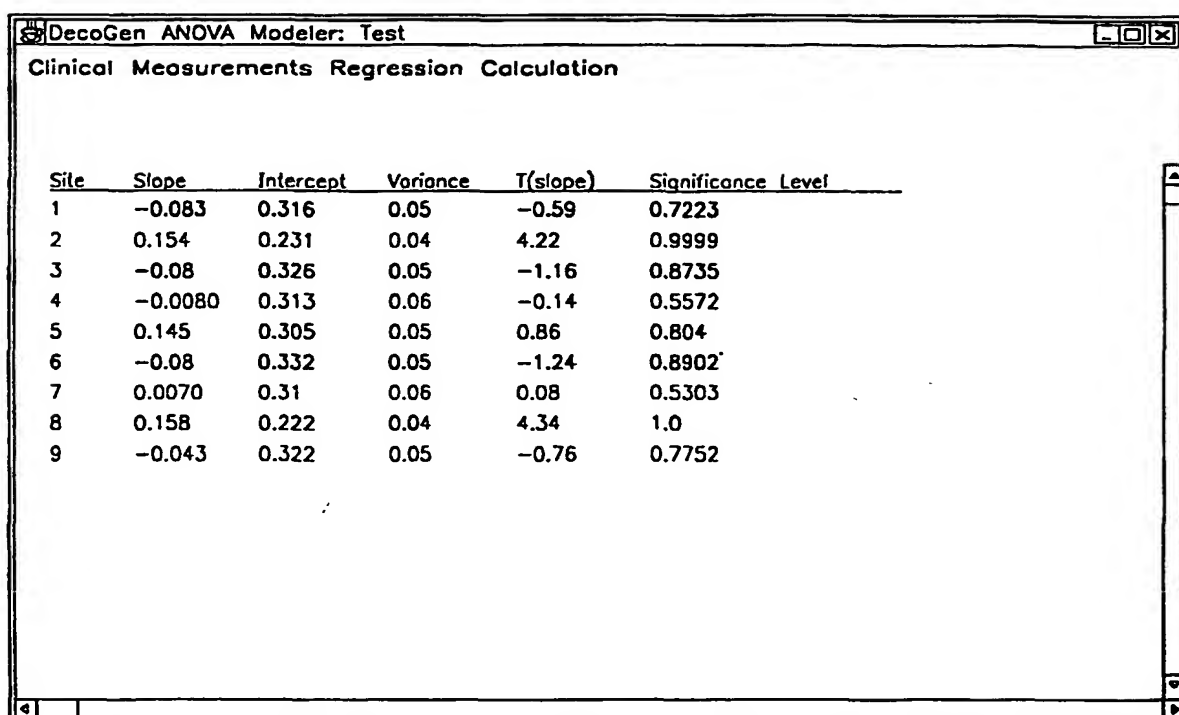


FIG. 20

23 / 62



DecoGen ANOVA Modeler: Test

Clinical Measurements Regression Calculation

Site	Slope	Intercept	Variance	T(slope)	Significance Level
1	-0.083	0.316	0.05	-0.59	0.7223
2	0.154	0.231	0.04	4.22	0.9999
3	-0.08	0.326	0.05	-1.16	0.8735
4	-0.0080	0.313	0.06	-0.14	0.5572
5	0.145	0.305	0.05	0.86	0.804
6	-0.08	0.332	0.05	-1.24	0.8902
7	0.0070	0.31	0.06	0.08	0.5303
8	0.158	0.222	0.04	4.34	1.0
9	-0.043	0.322	0.05	-0.76	0.7752

FIG. 21

24 / 62

FIG. 22

DecoGen Browser: CYP2D6

File Edit Help

GENAISANCE PHARMACEUTICAL

Pathways Gene Description Gene Structure mRNA Structure Protein Structure HAP Frequencies Population Linkage SNP Distribution Phylogenetic Tree Genotype Analysis Clinical Distribution Edit Pathway MultiGene Clinical Trial Cohorts Expression Assay Data References

Clinical Measurements vs. Haplotype View

+ - Recalculate View Distribution Clinical Model ANOVA Regression

Polymorphism: ☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☒ 8 ☐ 9

Summary of clinical measurements vs. patient haplotypes

Measure: Test

Test

0.0 0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0

HAP 1	Hap 2	N	%Pop.	Mean	Stddev	X ² 2	Q(X ² 2)(K-3)
*C****G*	*C****G*	23	50%	0.24	0.12	9.17	0.0 (1)
*T****G*	*C****G*	2	4%	0.15	0.07	0.0	1.0 (-3)
*T****G*	*T****G*	4	8%	0.2	0.08	0.0	1.0 (-3)
*C****A*	*C****G*	5	10%	0.22	0.13	0.8	1.0 (-2)
*C****A*	*C****A*	3	6%	0.13	0.15	0.0	1.0 (-3)
*T****A*	*C****G*	1	2%	0.5	0.0	0.0	1.0 (-3)
*T****A*	*T****G*	2	4%	0.55	0.07	0.0	1.0 (-3)
*T****A*	*C****A*	3	6%	.6	0.1	0.0	1.0 (-3)
*T****A*	*T****A*	3	6%	0.93	0.06	0.0	1.0 (-3)

© Test

© Test

25/62

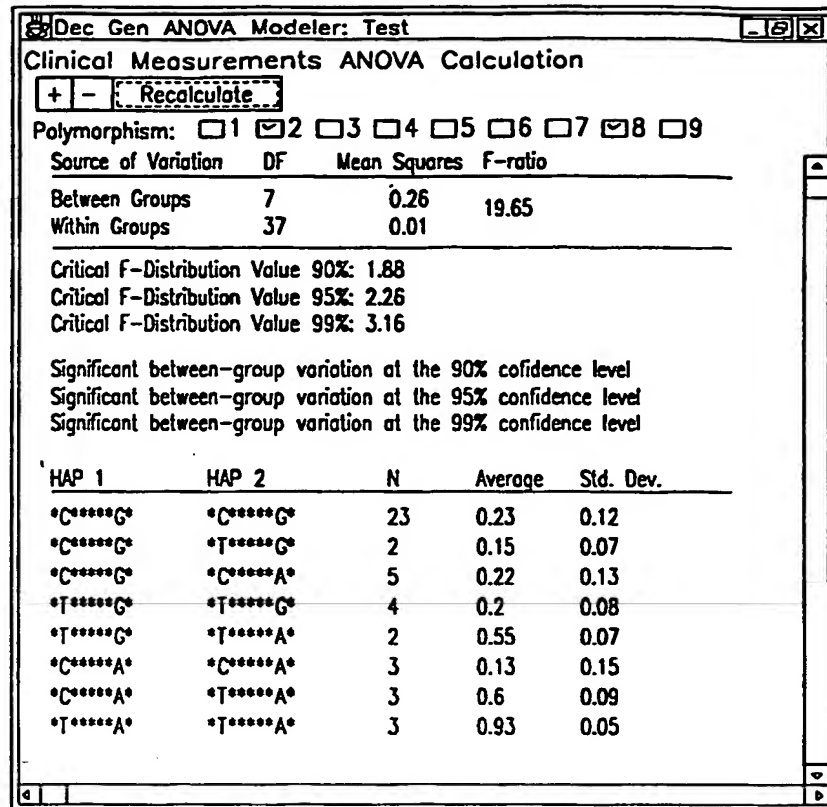


FIG. 23

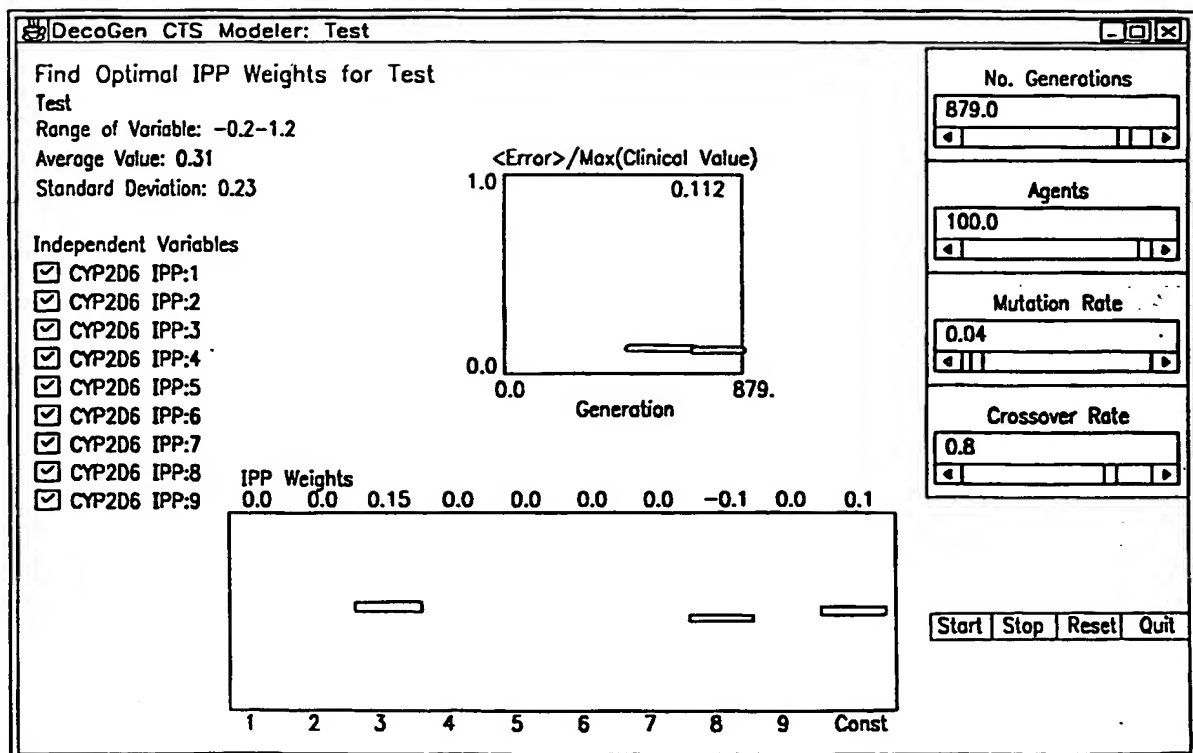


FIG. 24

SUBSTITUTE SHEET (RULE 26)

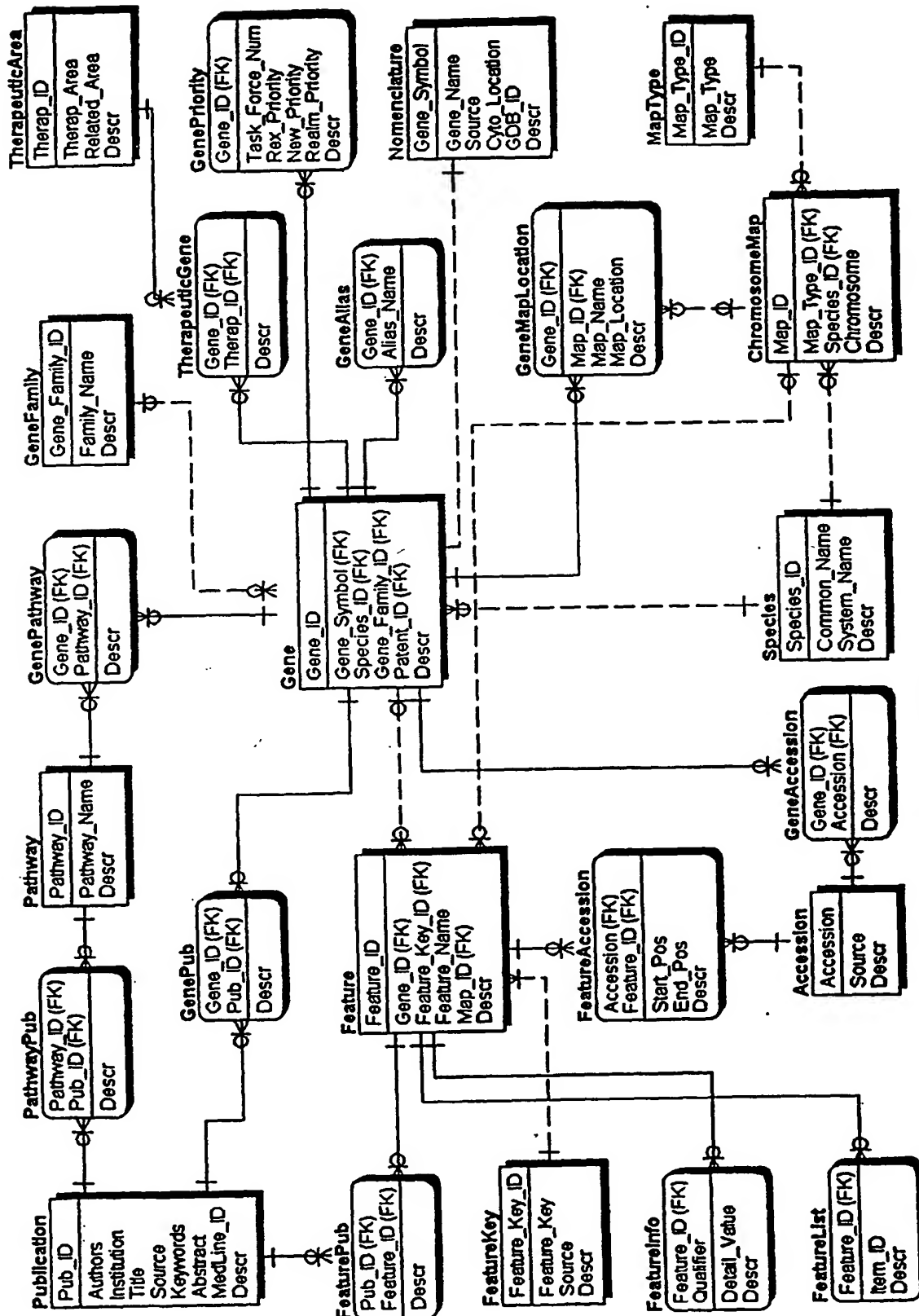
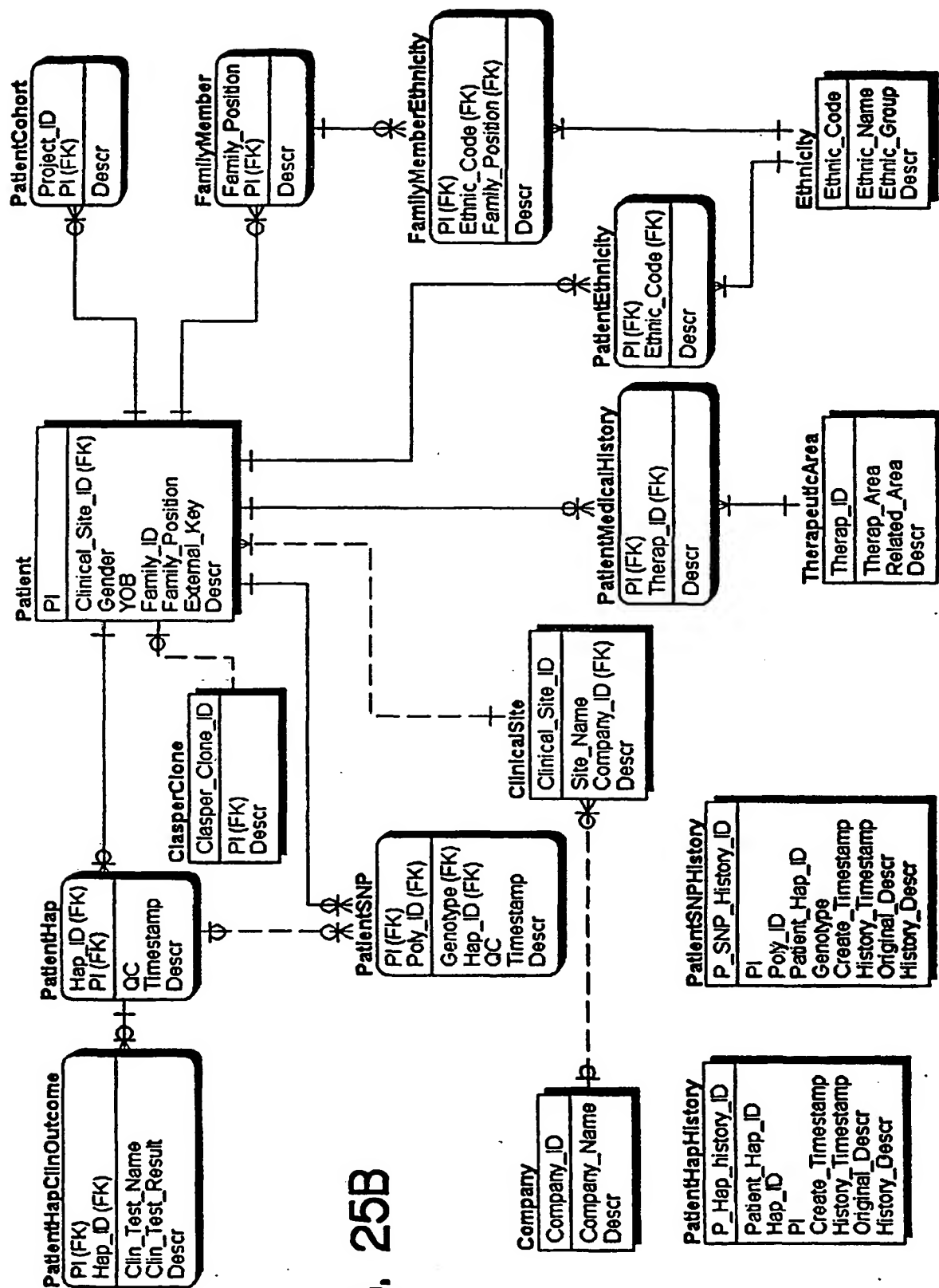


FIG. 25A



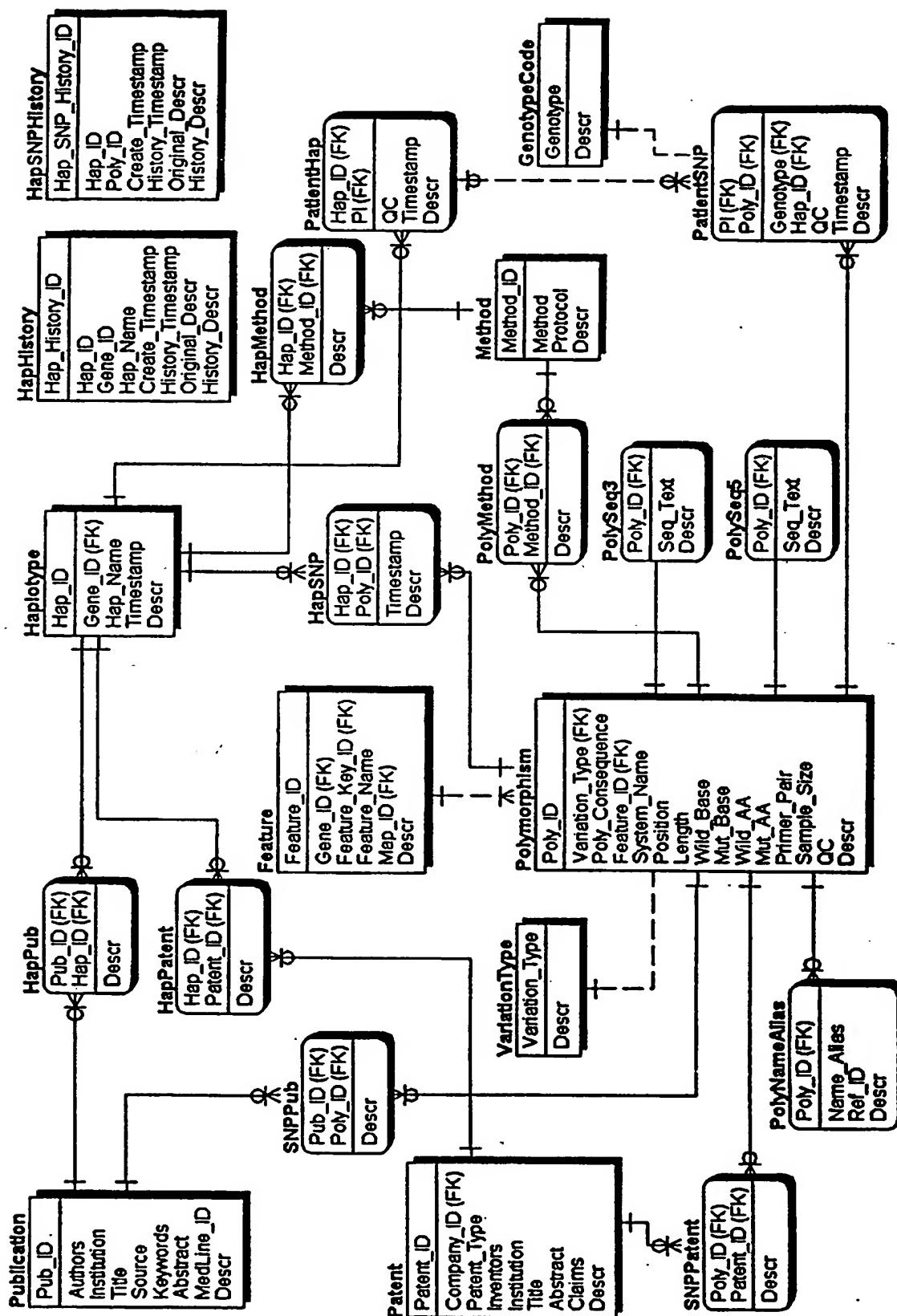


FIG. 25C

29/62

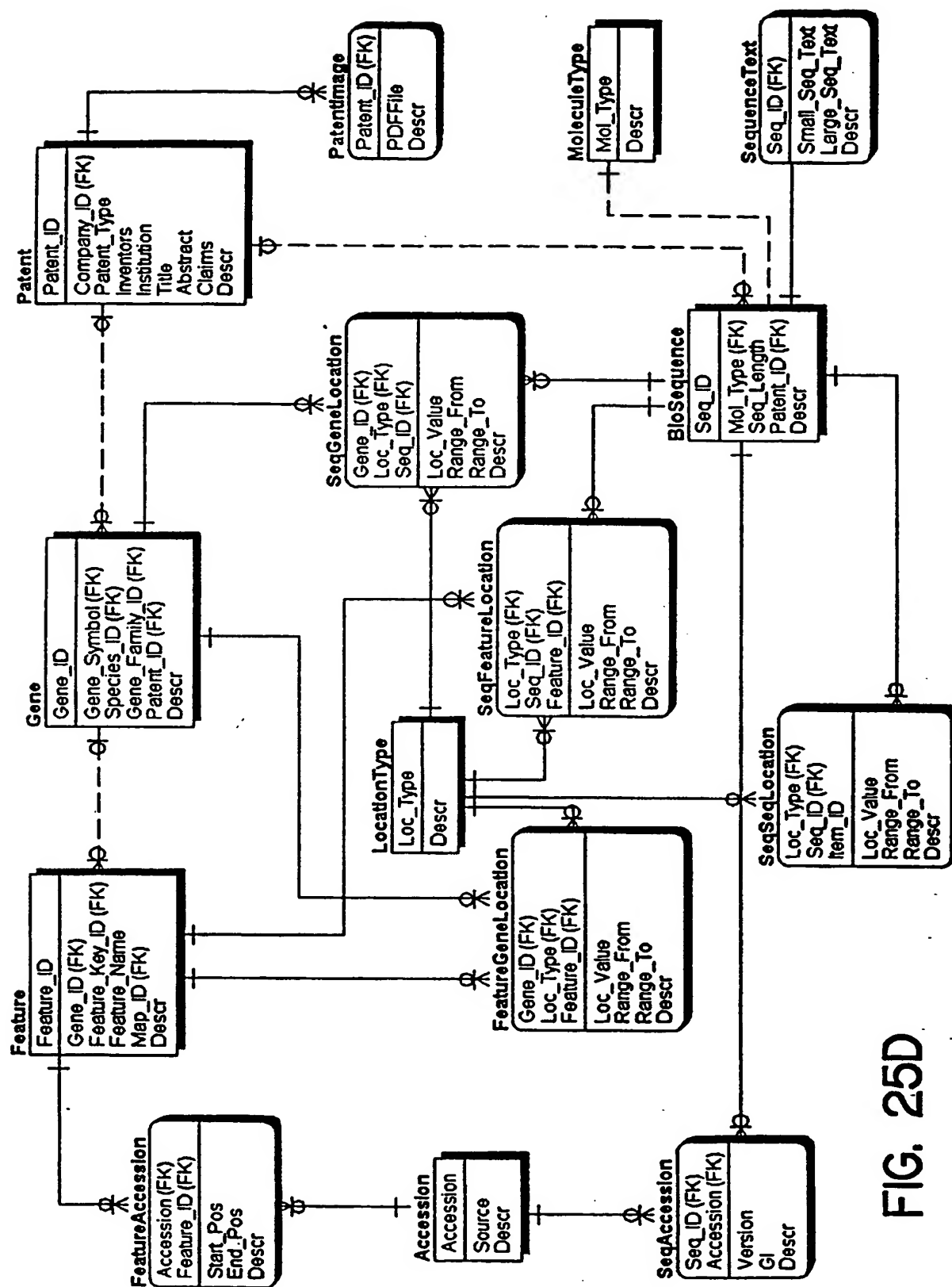


FIG. 25D

30/62

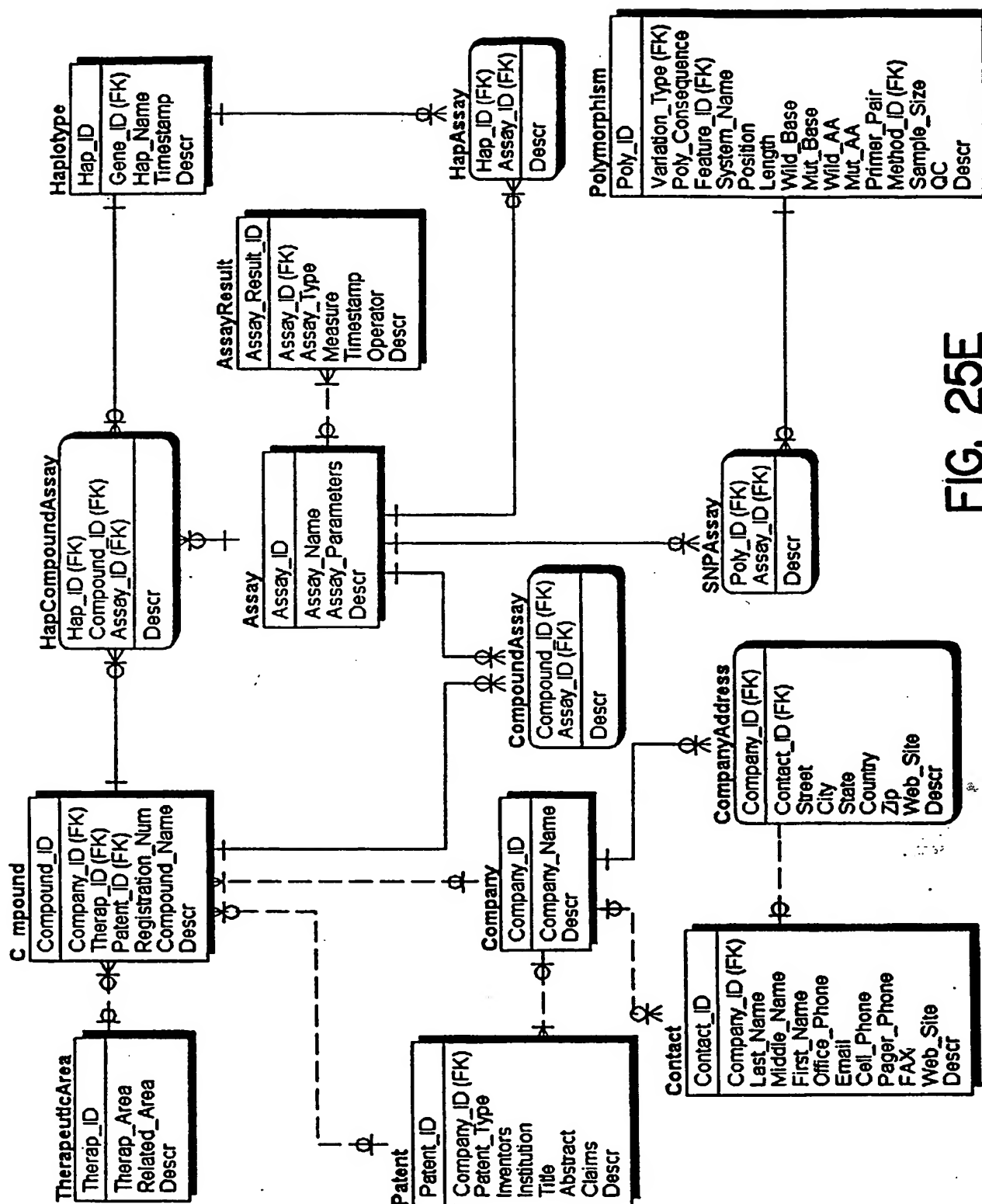
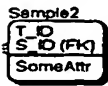


FIG. 25E

31 / 62

Legend of Figures:

Rectangle Boxes: Tables in the database.



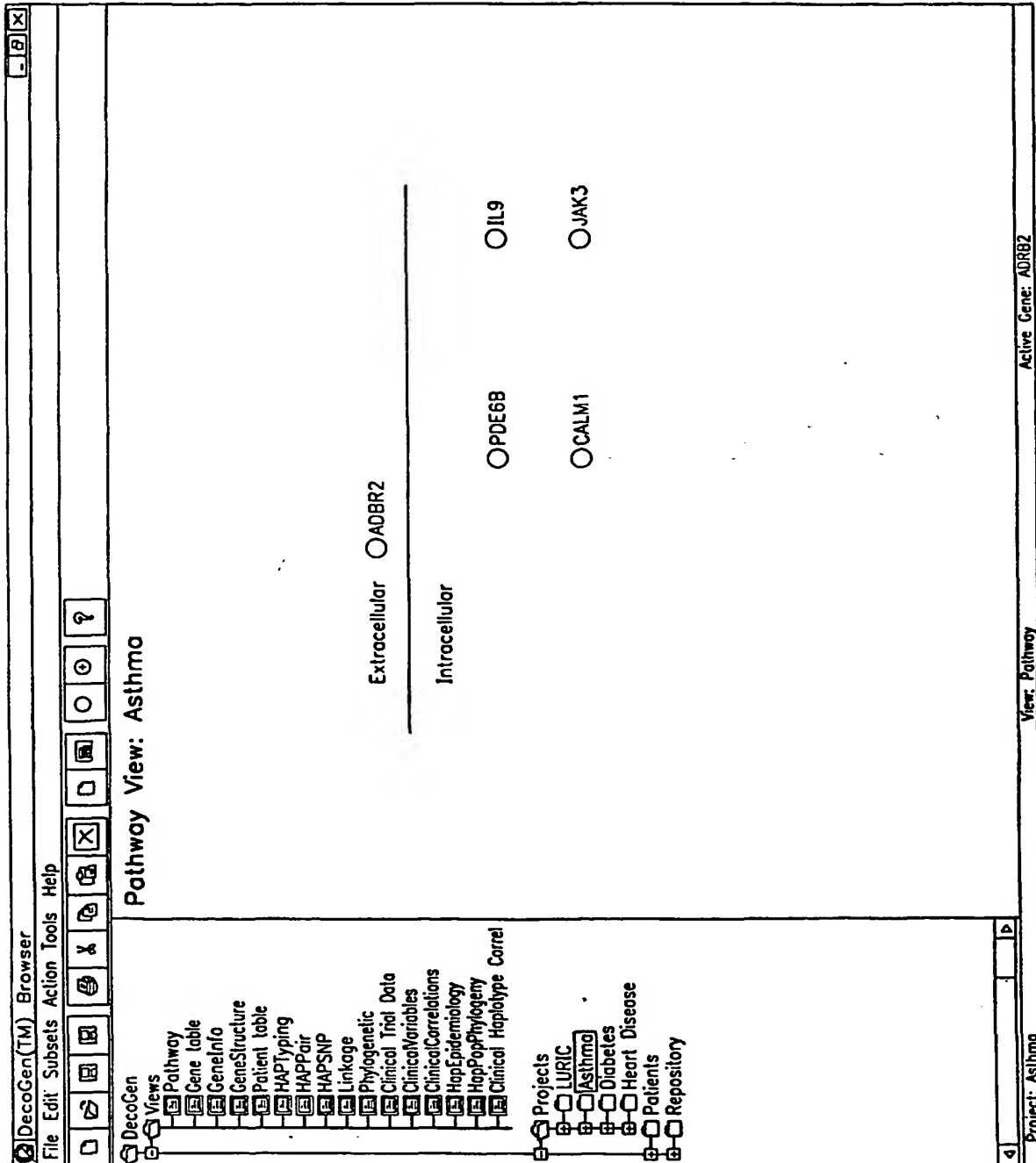
Rounded Boxes: Children tables that depend on their parent tables. This dependency requires that a parent record to be in existence before a child record can be created.

- 2: ————* Identifying parent / child relationship. It depicts the not nullable 1-to-0-or-many relationship.
- 4: ————* Non-identifying parent / child relationship. It represents the nullable 0-or-1-to-many relationship.
- 6: ————* Identifying parent / child relationship. It depicts the not nullable 1-to-1-or-many relationship.
- 8: - - - - * Non-identifying parent / child relationship. It represents the not nullable 1-to-1-or-many relationship.
- 10: |——— Non-identifying parent / child relationship. It depicts the not nullable 1-to-exact-1 relationship.
- 12: ⊖ ——— Non-identifying parent / child relationship. It represents the nullable 0-or-1-to-exact-1 relationship.
- 14: |———* Non-identifying parent / child relationship. It represents the not nullable 0-or-1-to-many relationship.

FIG. 25F

32 / 62

FIG. 26



33 / 62

FIG. 27

DecoGen(TM) Browser
File Edit Subsets Action Tools Help

Views

- ☒ Pathway
- ☒ Gene Table
- ☒ GeneInfo
- ☒ GeneStructure
- ☒ Patient Table
- ☒ HAP Typing
- ☒ HAP Pair
- ☒ HAP SNP
- ☒ Linkage
- ☒ Phylogenetic
- ☒ Clinical Trial Data
- ☒ Clinical Variables
- ☒ Clinical Correlations
- ☒ Clinical Epidemiology
- ☒ HapPhylogeny
- ☒ Clinical Haplotype Correl
- ☒ Projects
- ☐ LURIC
- ☐ Asthma
- ☐ Diabetes
- ☐ Heart Disease
- ☐ Patients
- ☐ Repository

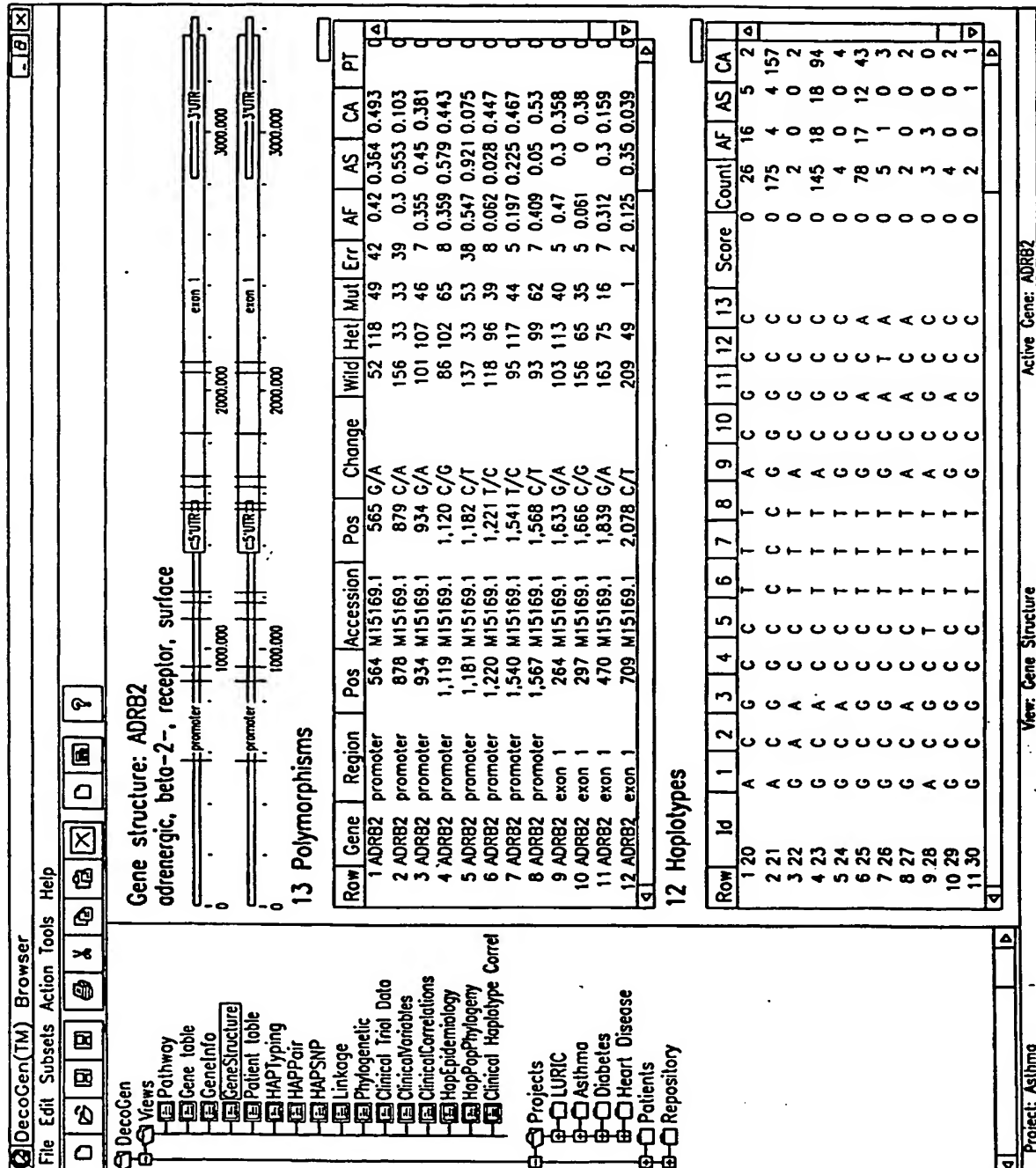
Gene Description View

Name	ADRB2
Definition	adrenergic, beta-2-, receptor, surface
Function	Function
Organism	Human
Length	3451
No. Features	5
Population Size	261
No. Haplotypes	12
No. SNPs	13
Nucleotide Polymorphism (Ihelo)	7.9E-4 +/- 3.9E-4
Nucleotide Diversity (π)	4.6E-4 +/- 2.8E-4

Project: Asthma View: GeneInfo Active Gene: ADRB2

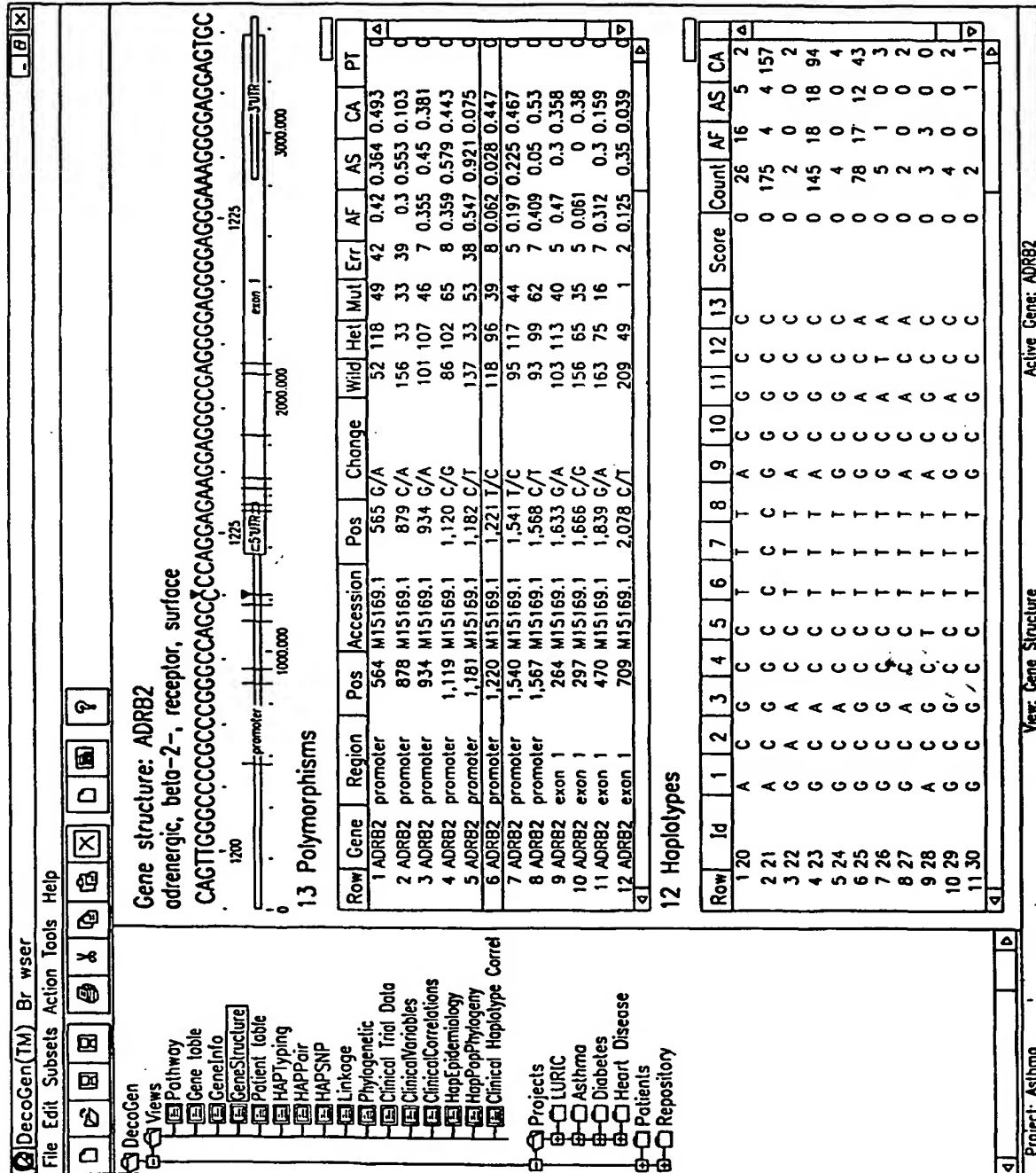
34 / 62

FIG. 28A



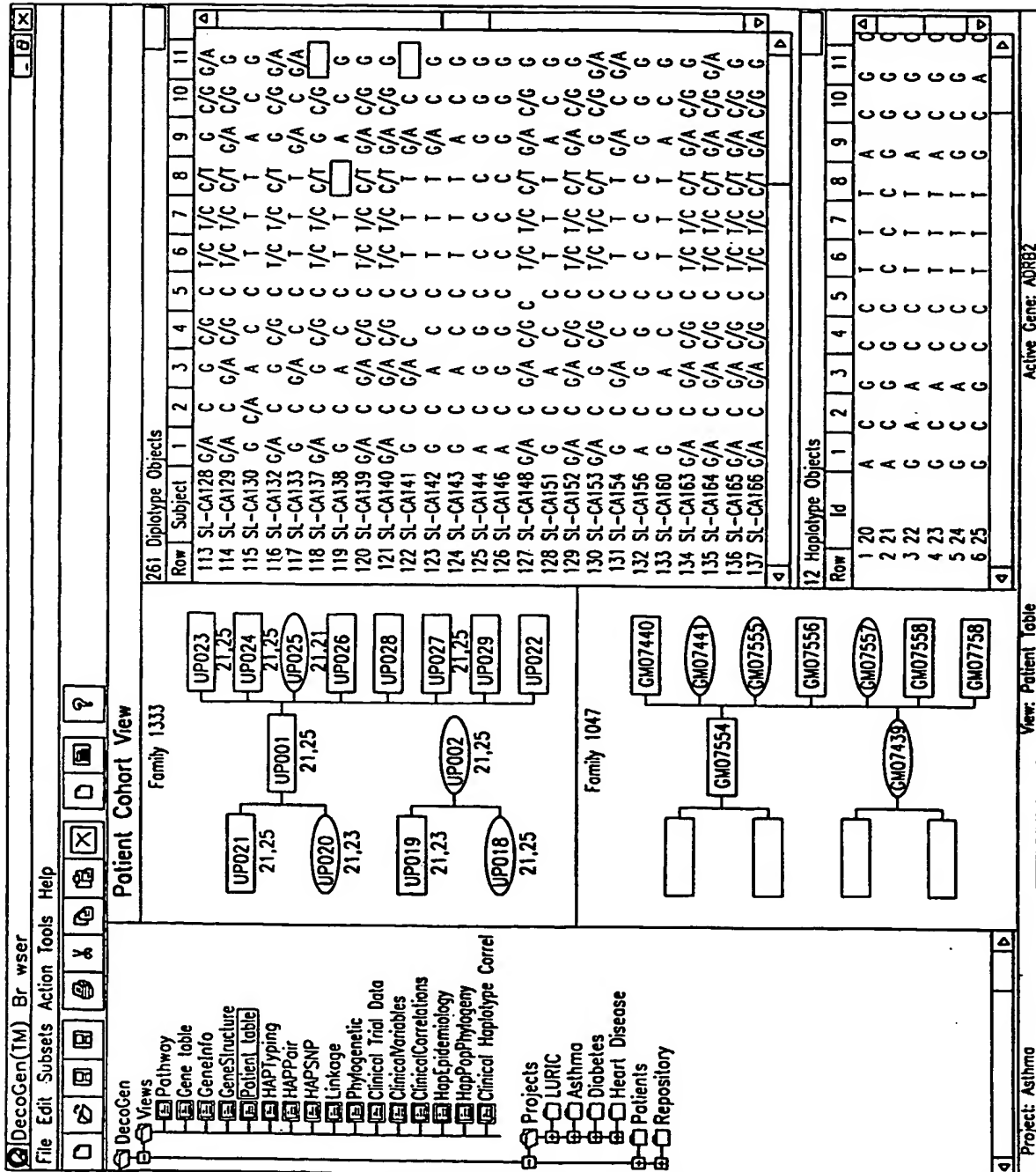
35 / 62

FIG. 28B



36 / 62

FIG. 29A



SUBSTITUTE SHEET (RULE 26)

FIG. 30

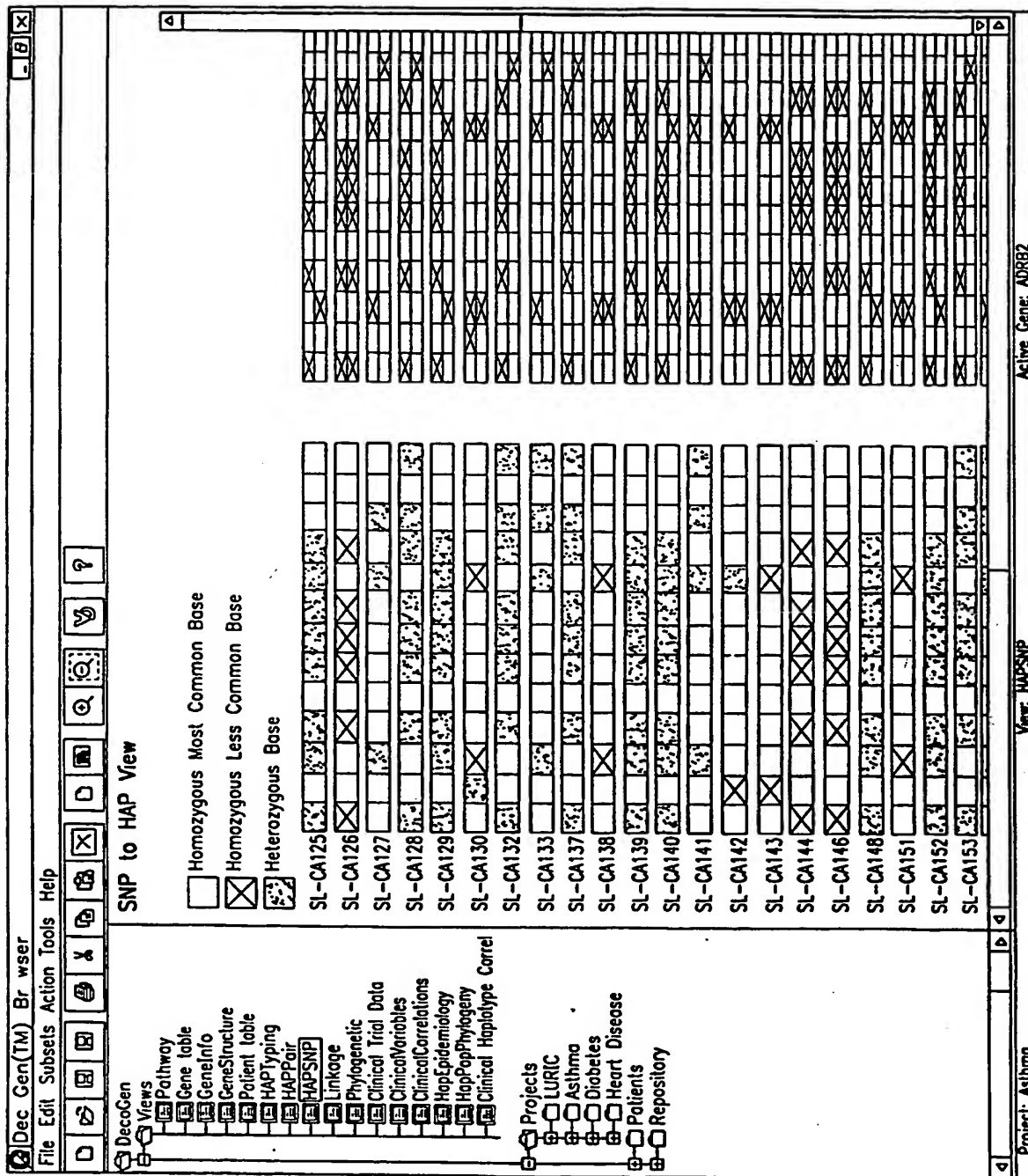


FIG. 3I

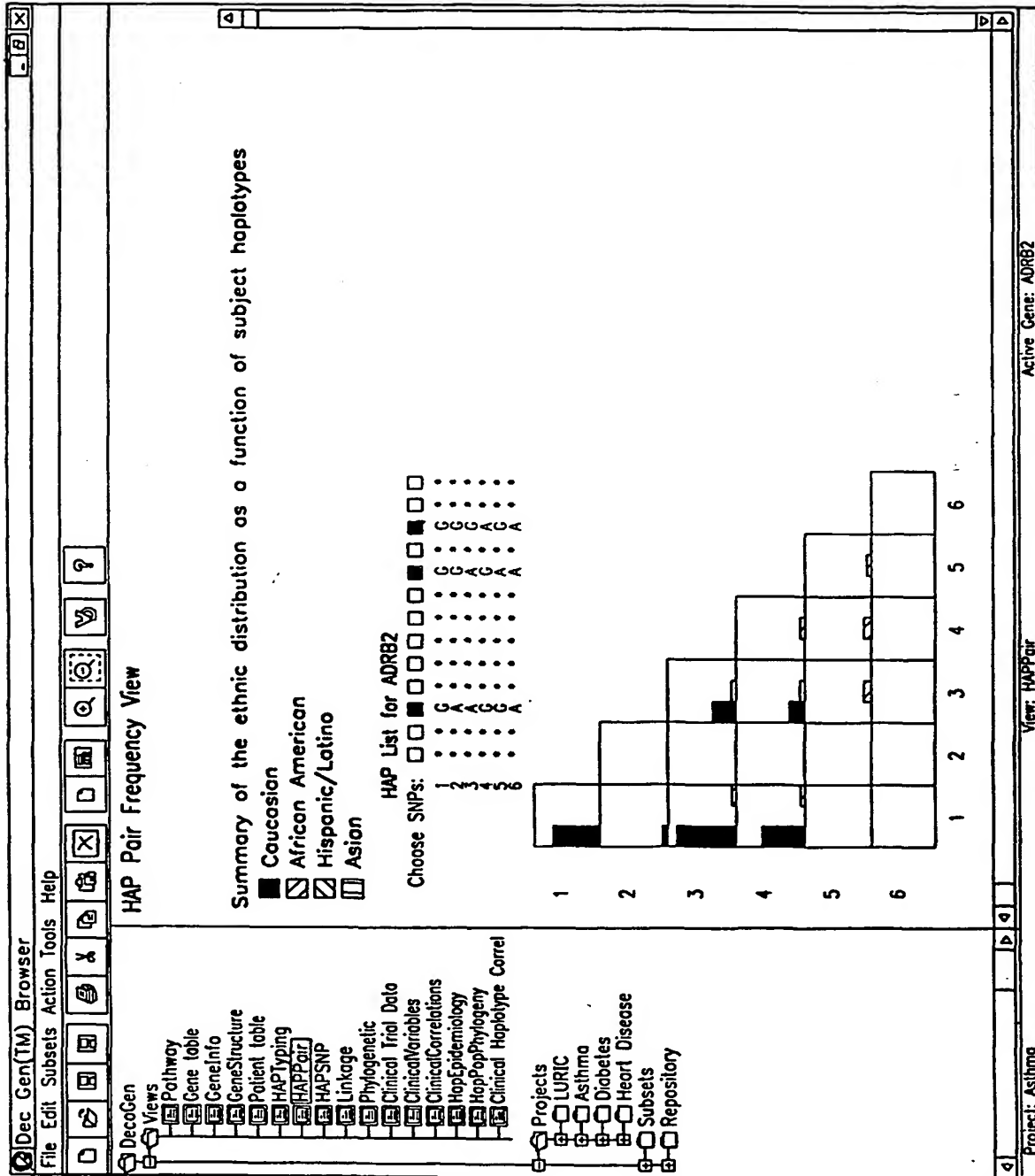
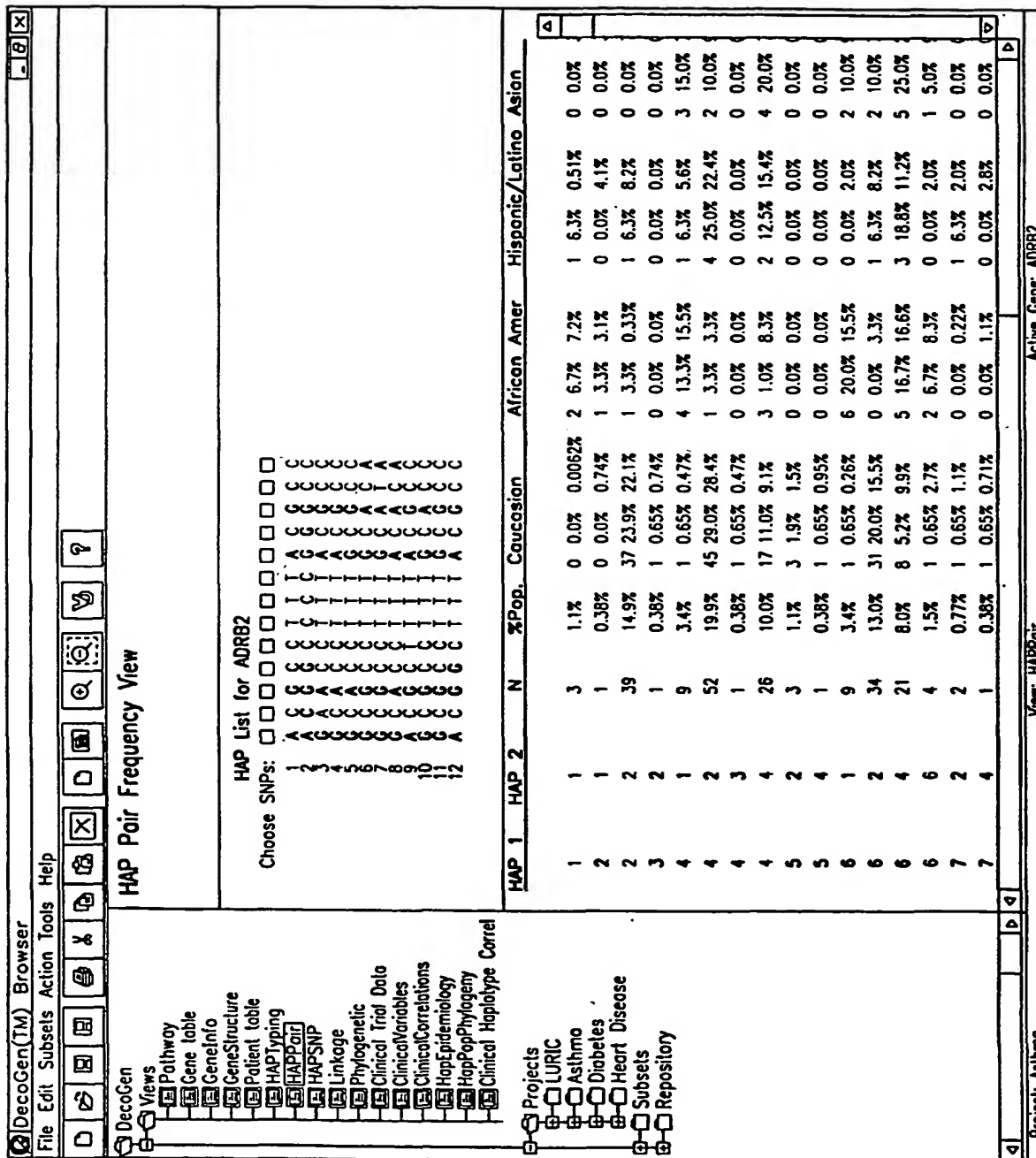
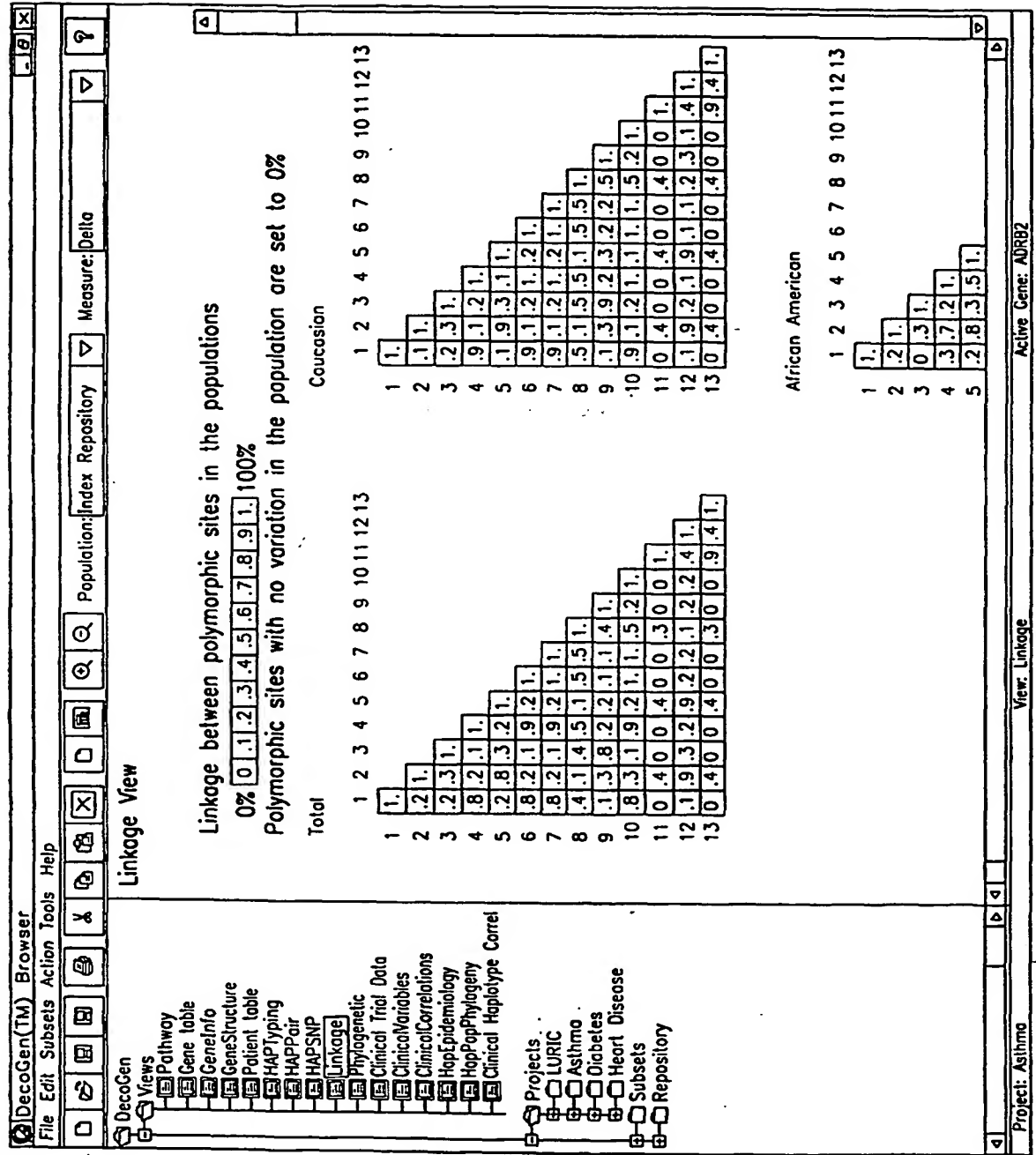


FIG. 32



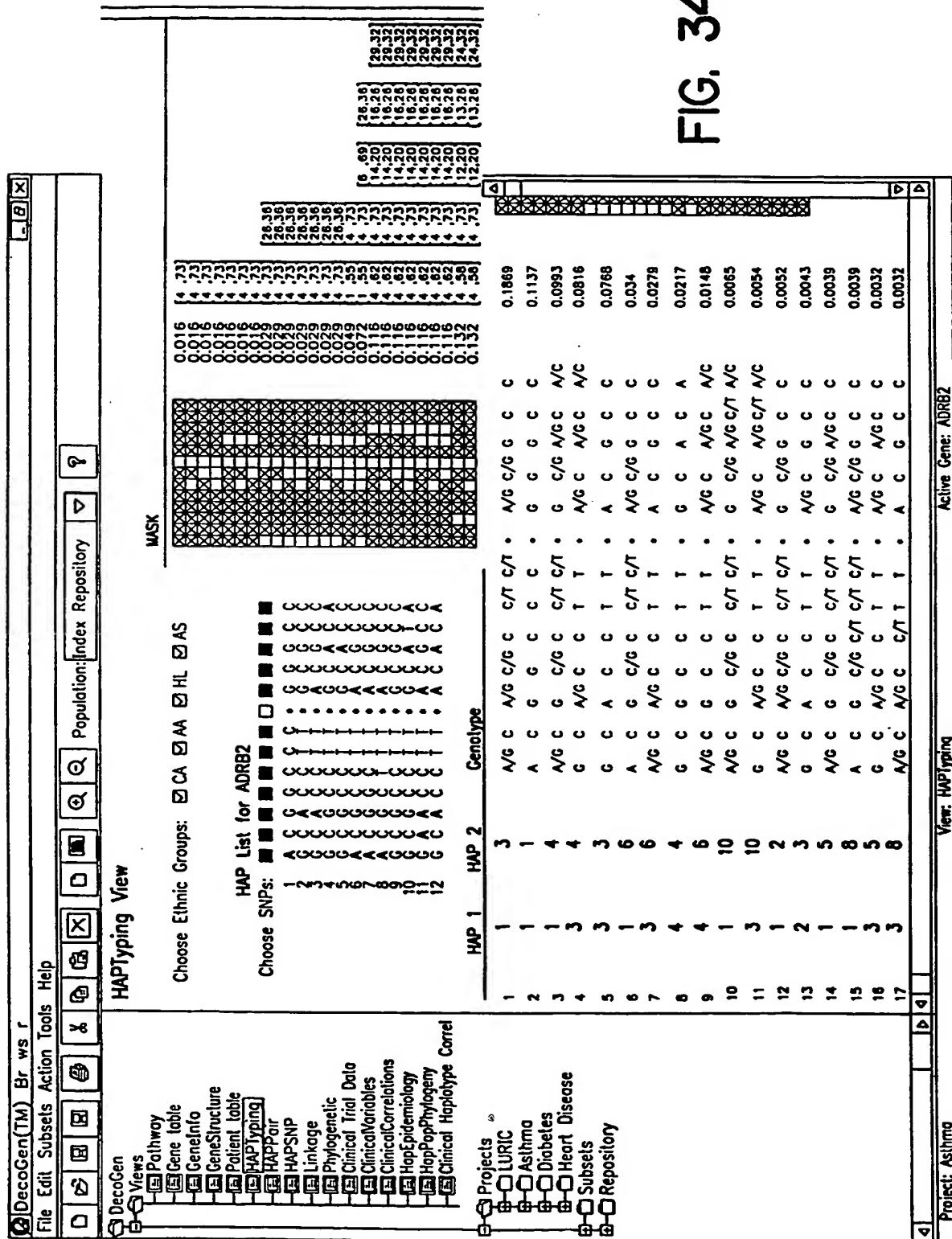
41/62

FIG. 33



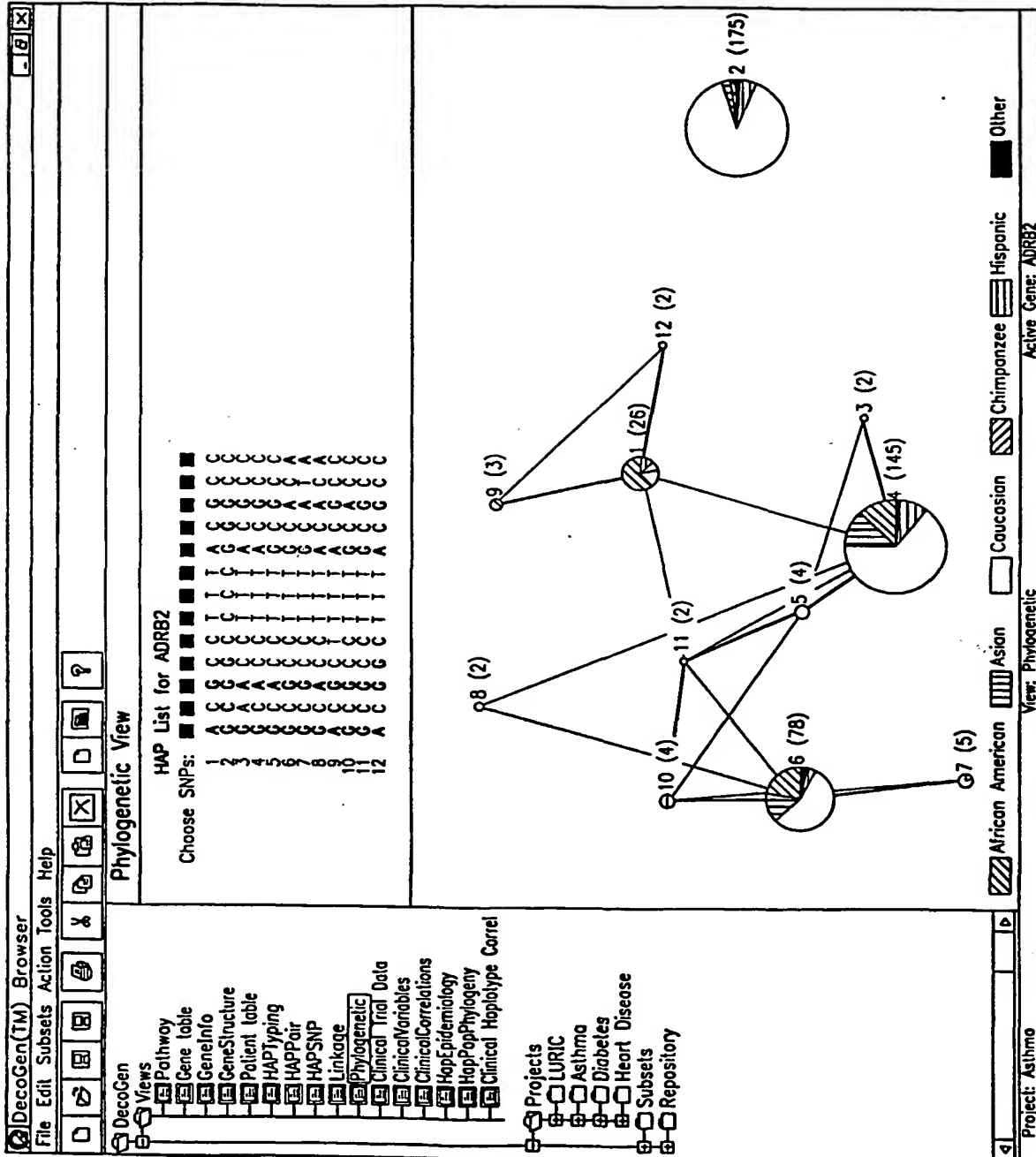
42/62

FIG. 34



43/62

FIG. 35



44/62

FIG. 36

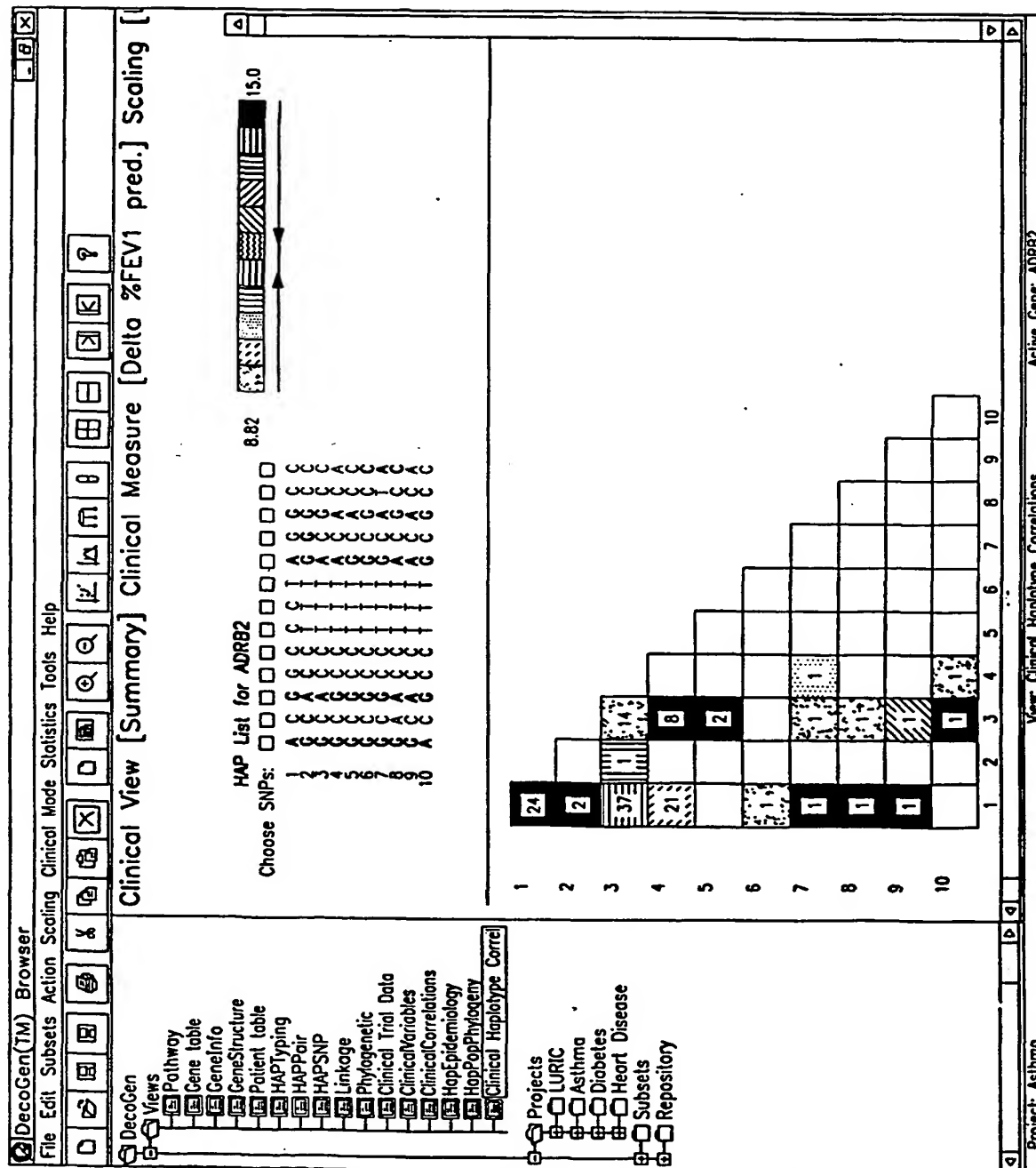
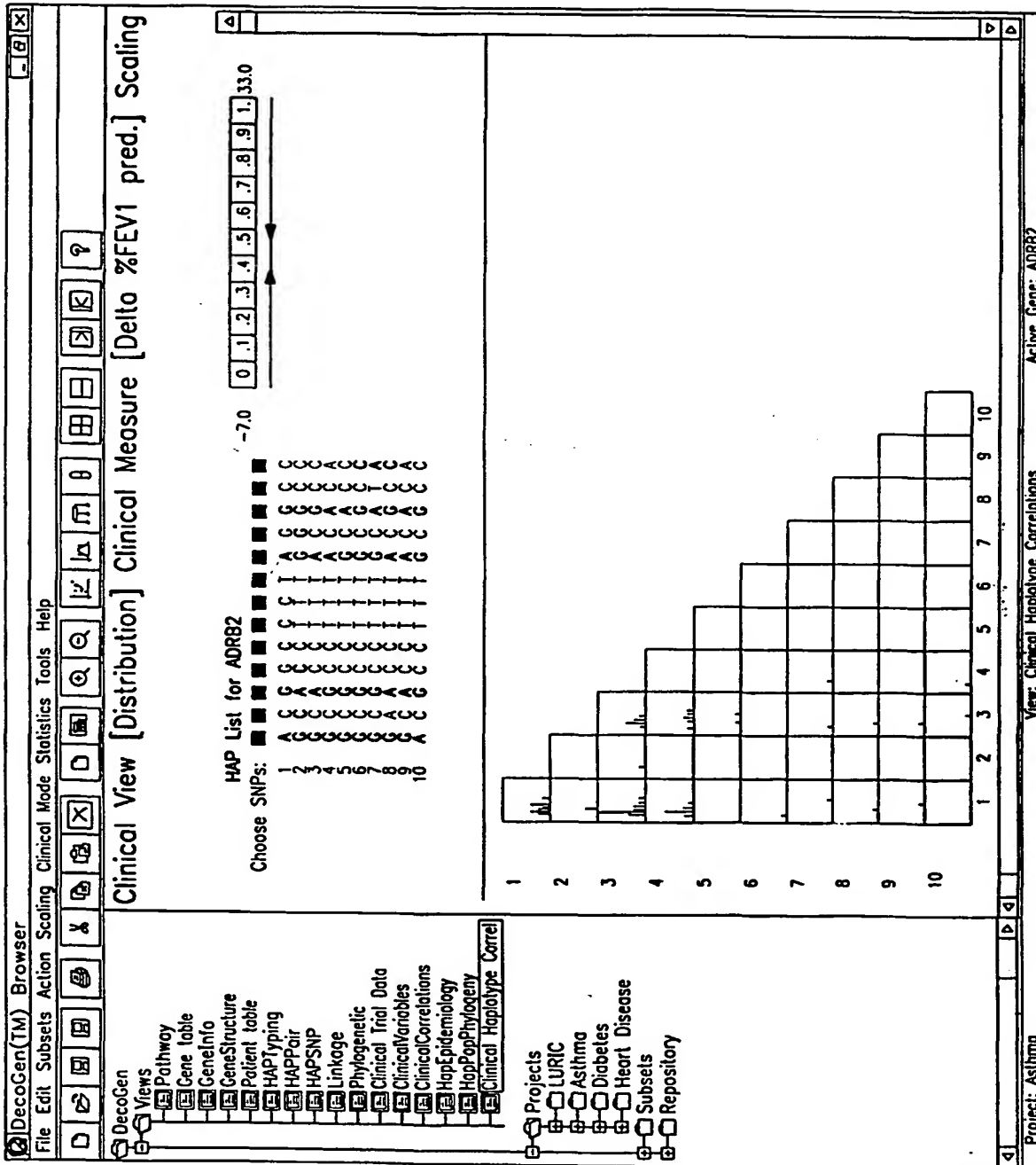


FIG. 37



46 / 62

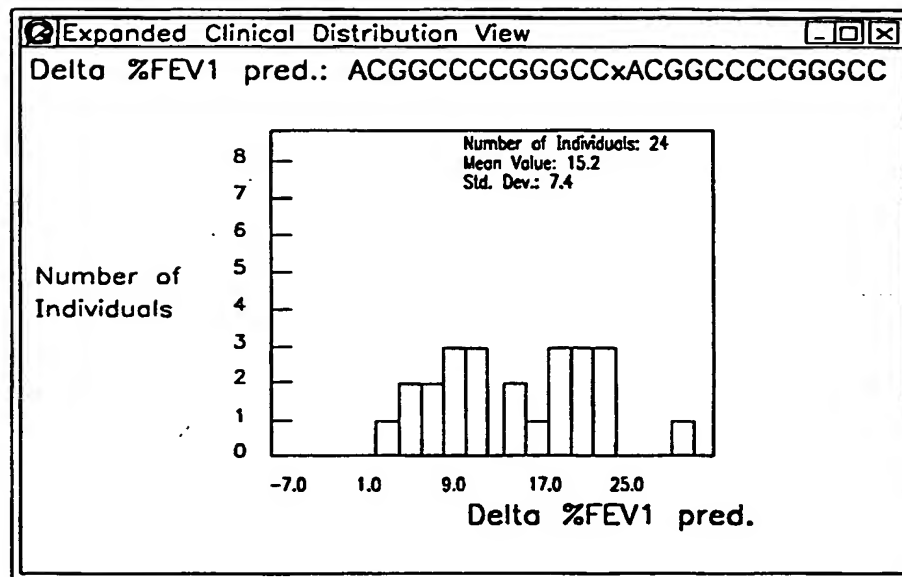


FIG. 38

47/62

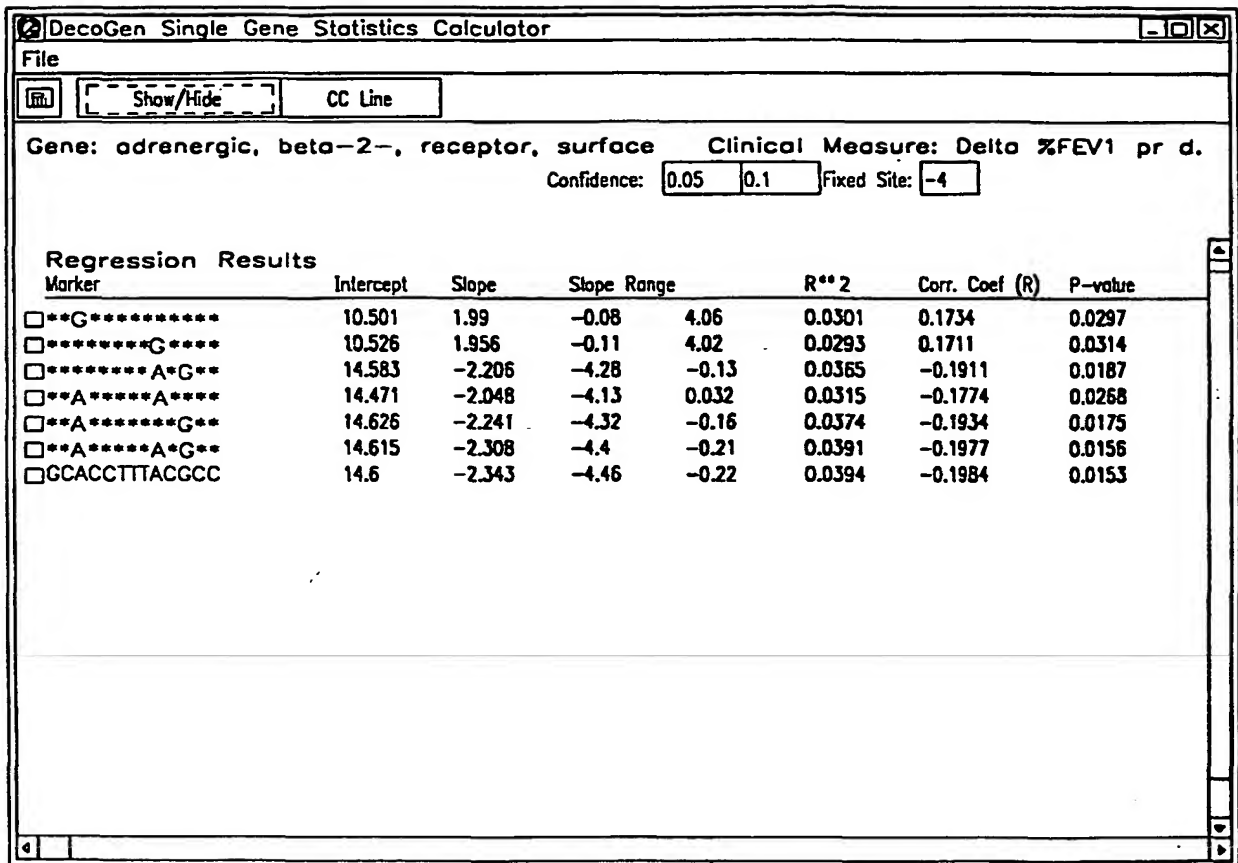


FIG. 39A

48 / 62

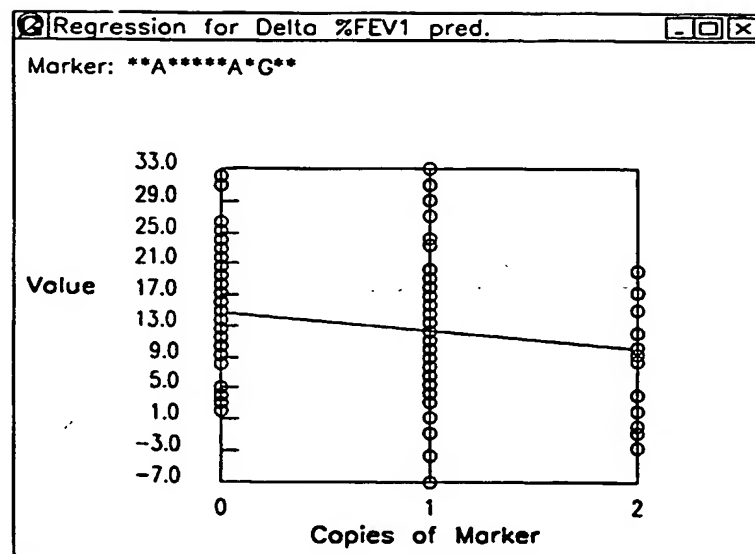
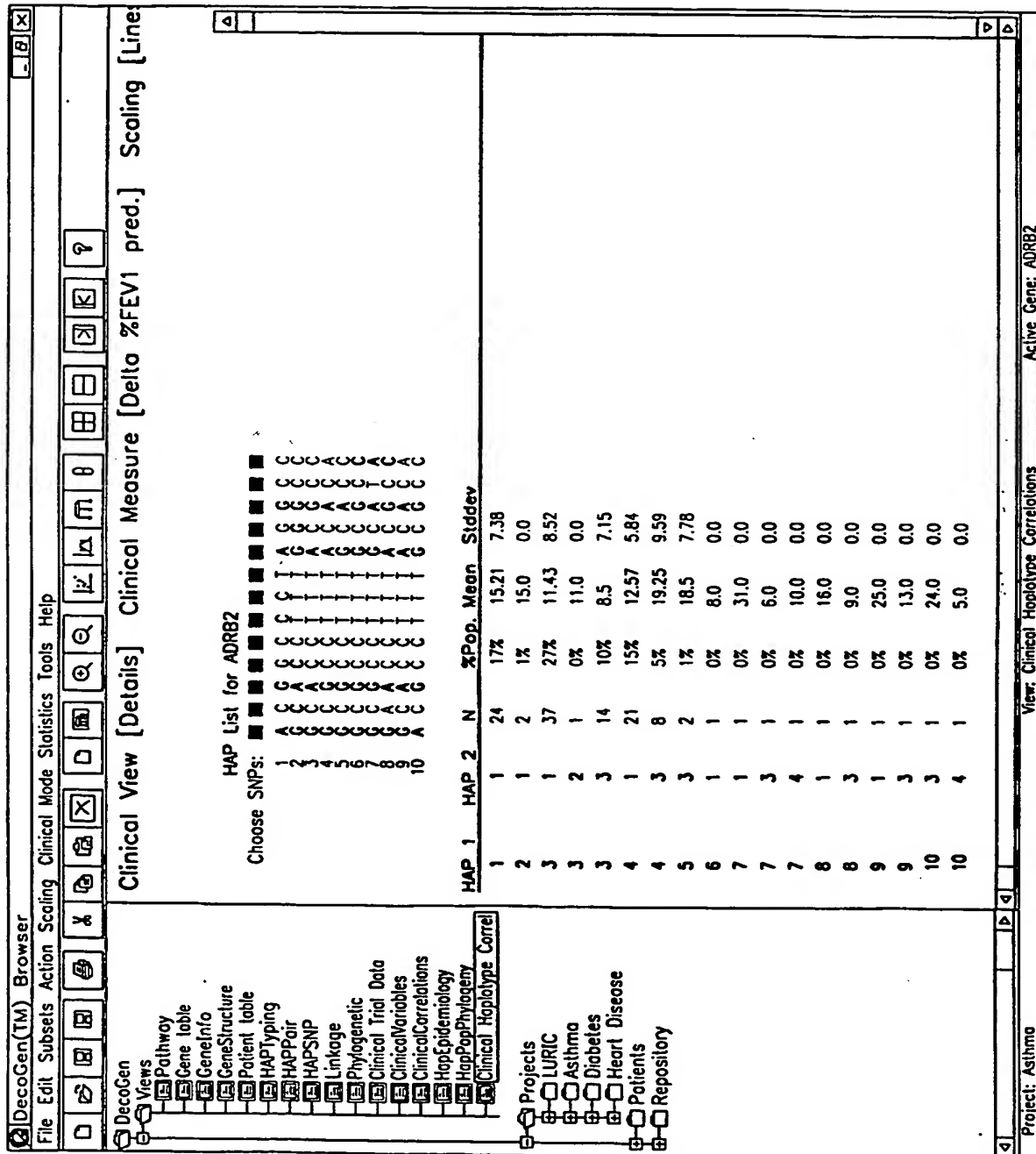


FIG. 39B

49/62

FIG. 40



51 / 62

FIG. 42

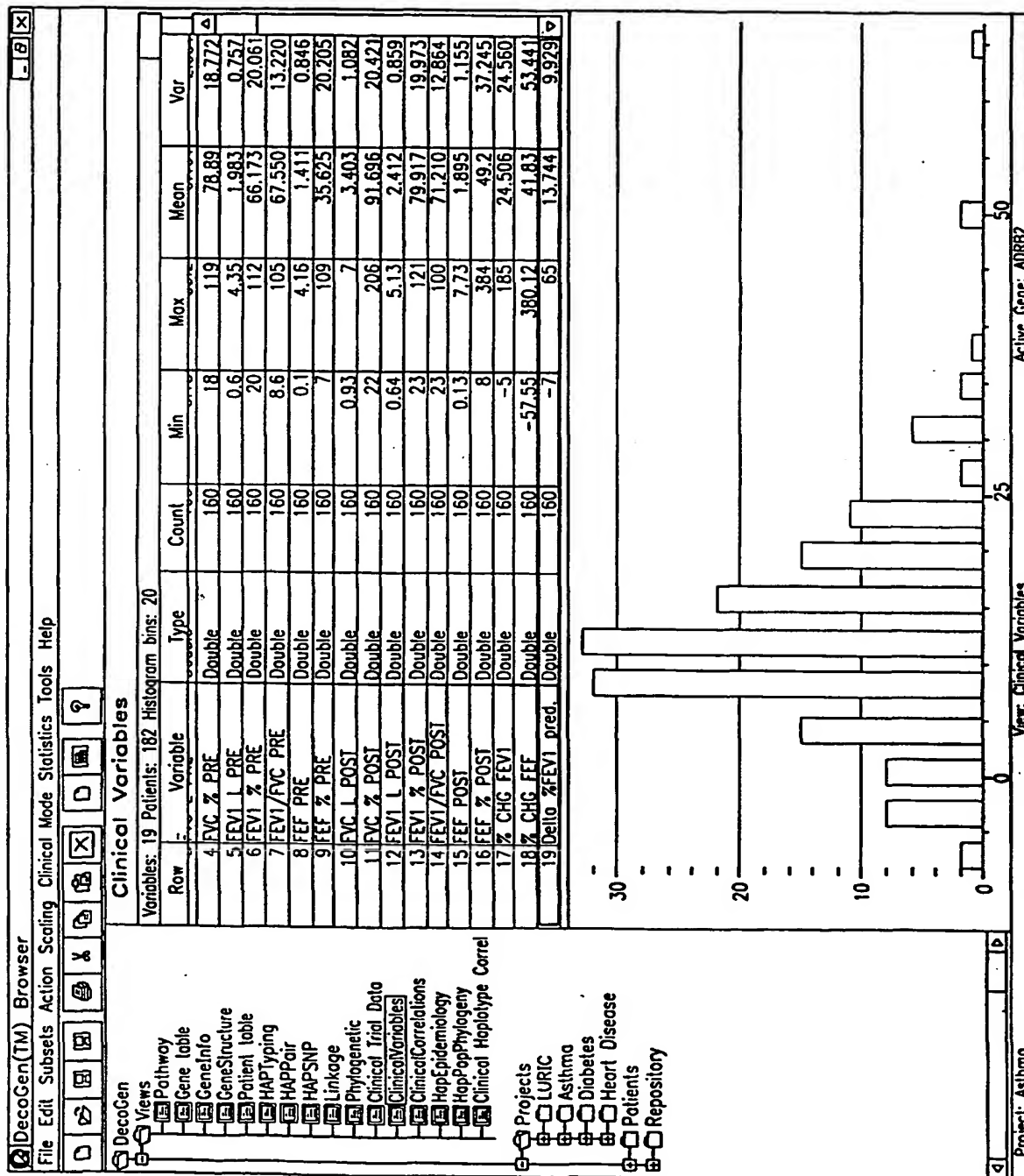
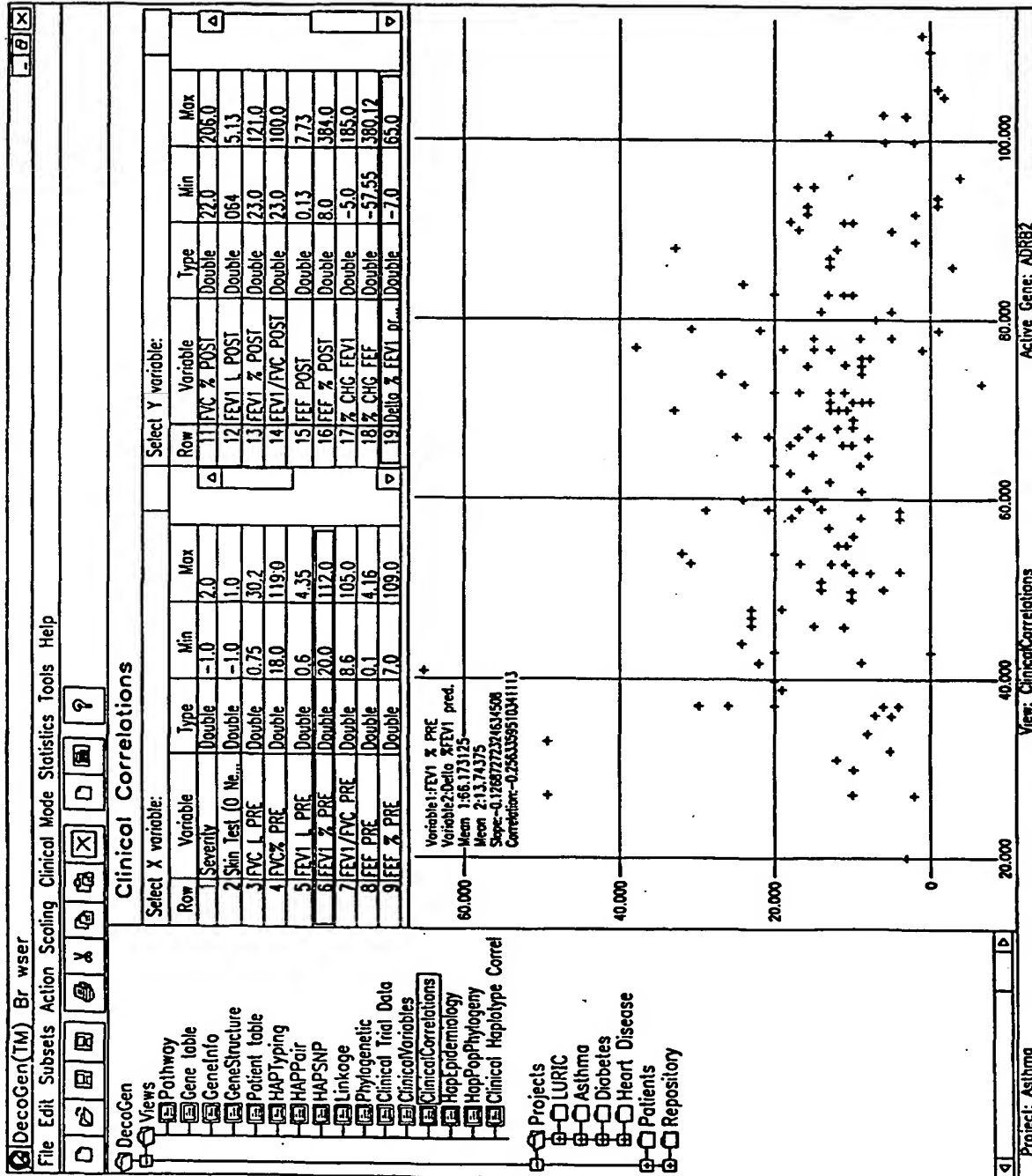


FIG. 43



53 / 62

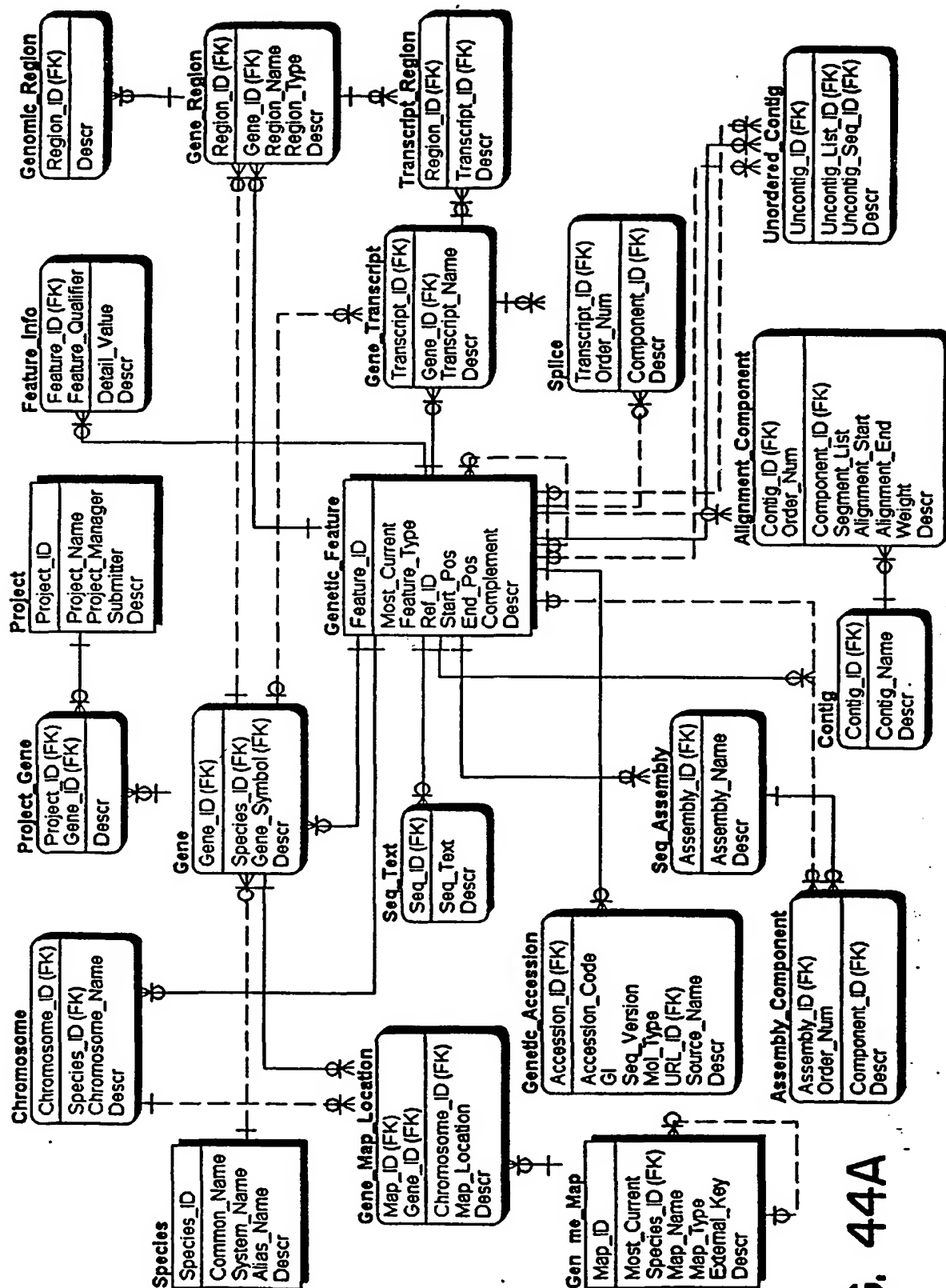


FIG. 44A

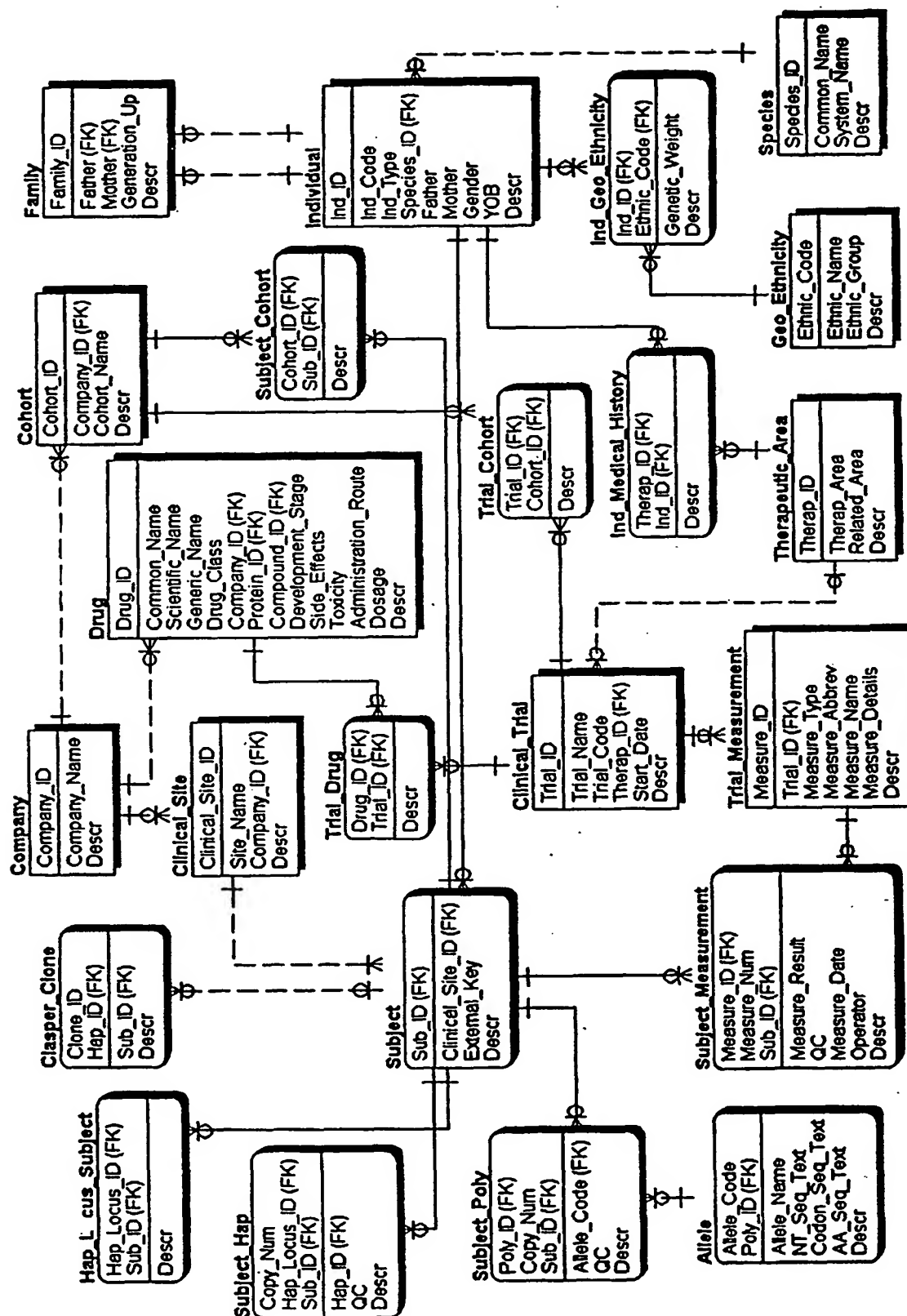
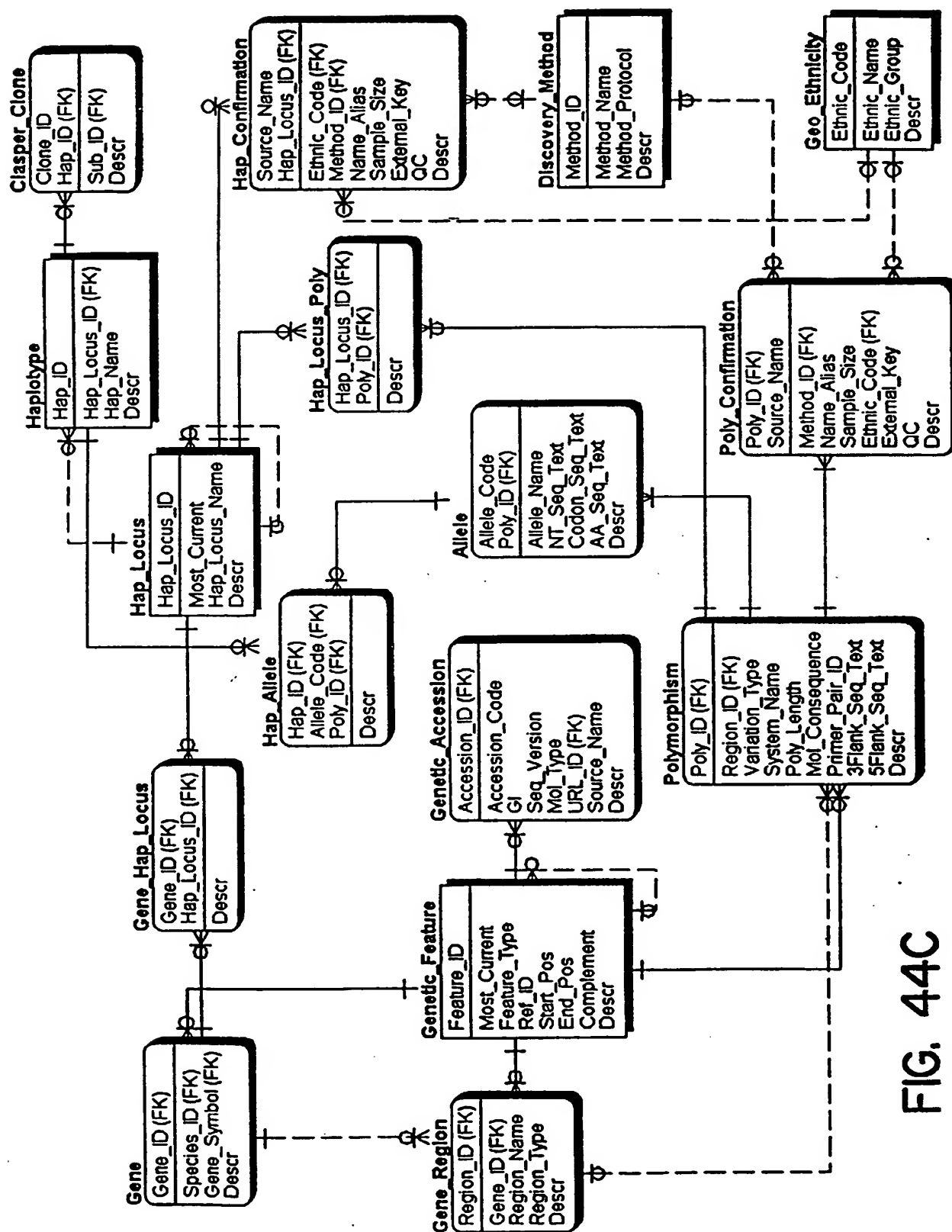


FIG. 44B



56 / 62

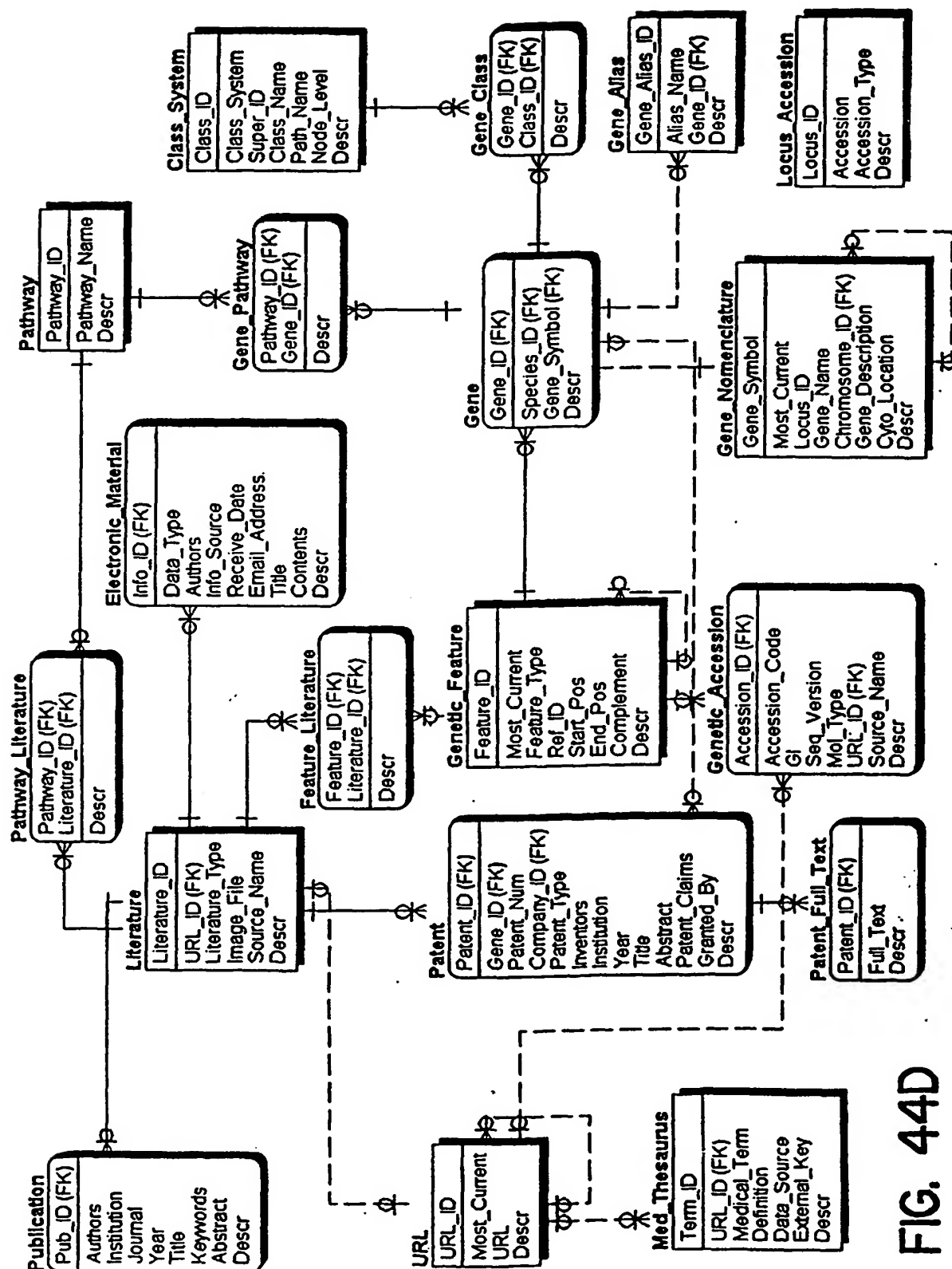


FIG. 44D

57/62

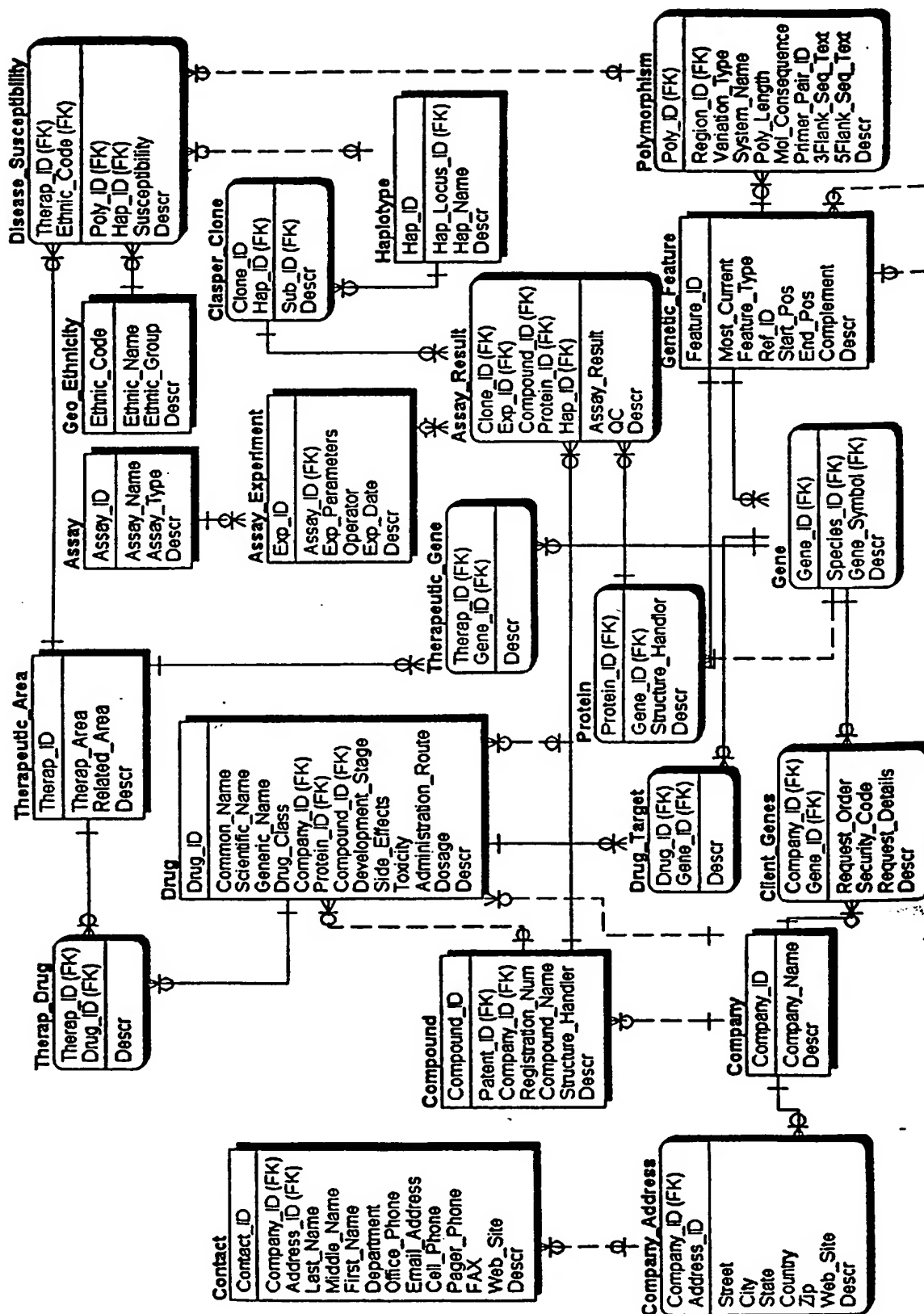
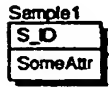
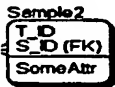


FIG. 44E

58 / 62

Legend of Figures:

Rectangle Boxes: Tables in the database.



Rounded Boxes: Children tables that depend on their parent tables. This dependency requires that a parent record to be in existence before a child record can be created.

- 2: Identifying parent / child relationship. It depicts the not nullable 1-to-0-or-many relationship.
- 4: Non-identifying parent / child relationship. It represents the nullable 0-or-1-to-many relationship.
- 6: Identifying parent / child relationship. It depicts the not nullable 1-to-1-or-many relationship.
- 8: Non-identifying parent / child relationship. It represents the not nullable 1-to-1-or-many relationship.
- 10: Identifying parent / child relationship. It depicts the not nullable 1-to-exact-1 relationship.
- 12: Non-identifying parent / child relationship. It represents the nullable 0-or-1-to-exact-1 relationship.
- 14: Non-identifying parent / child relationship. It represents the not nullable 0-or-1-to-many relationship.

FIG. 44F

59 / 62

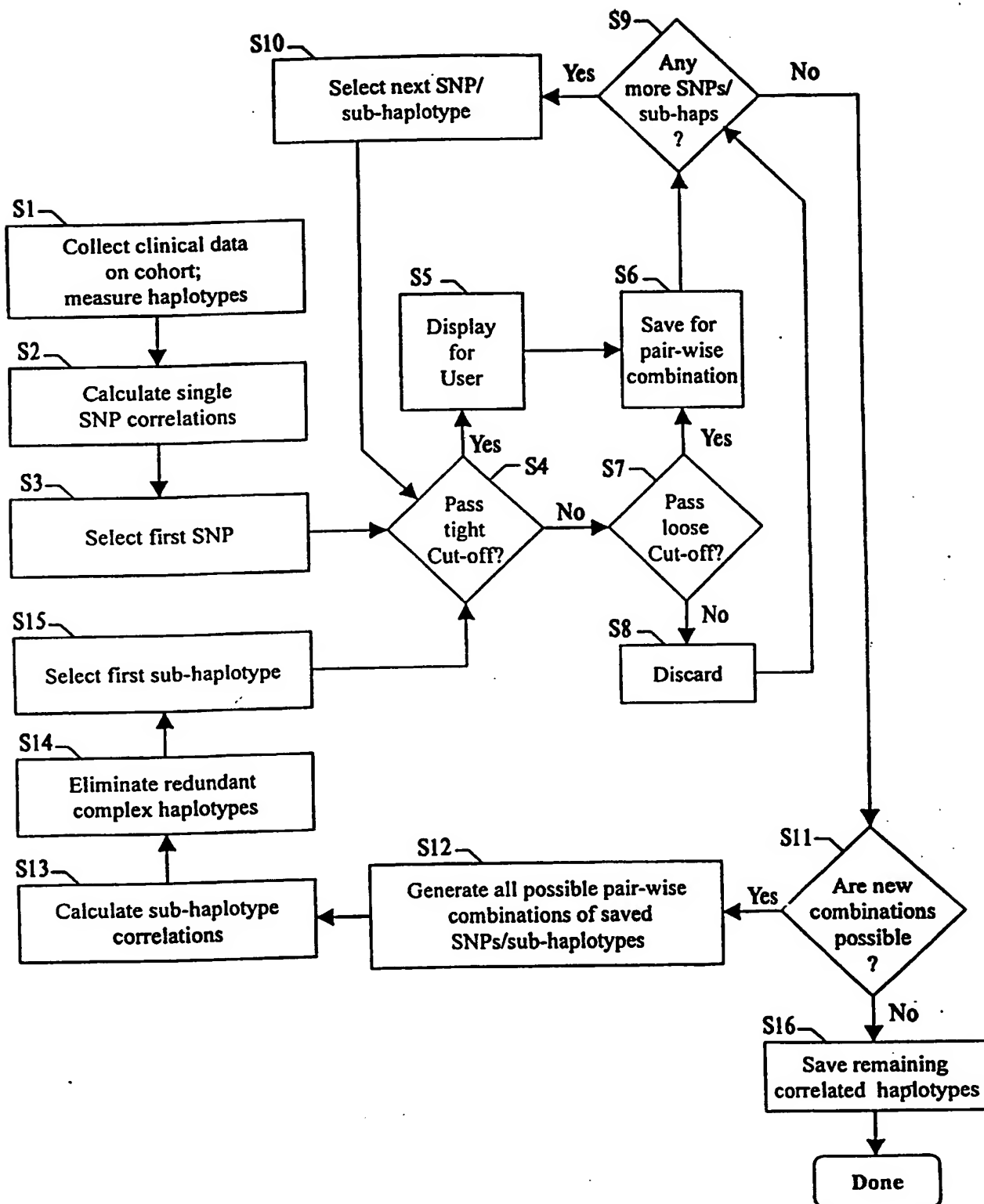


FIG. 45

60 / 62

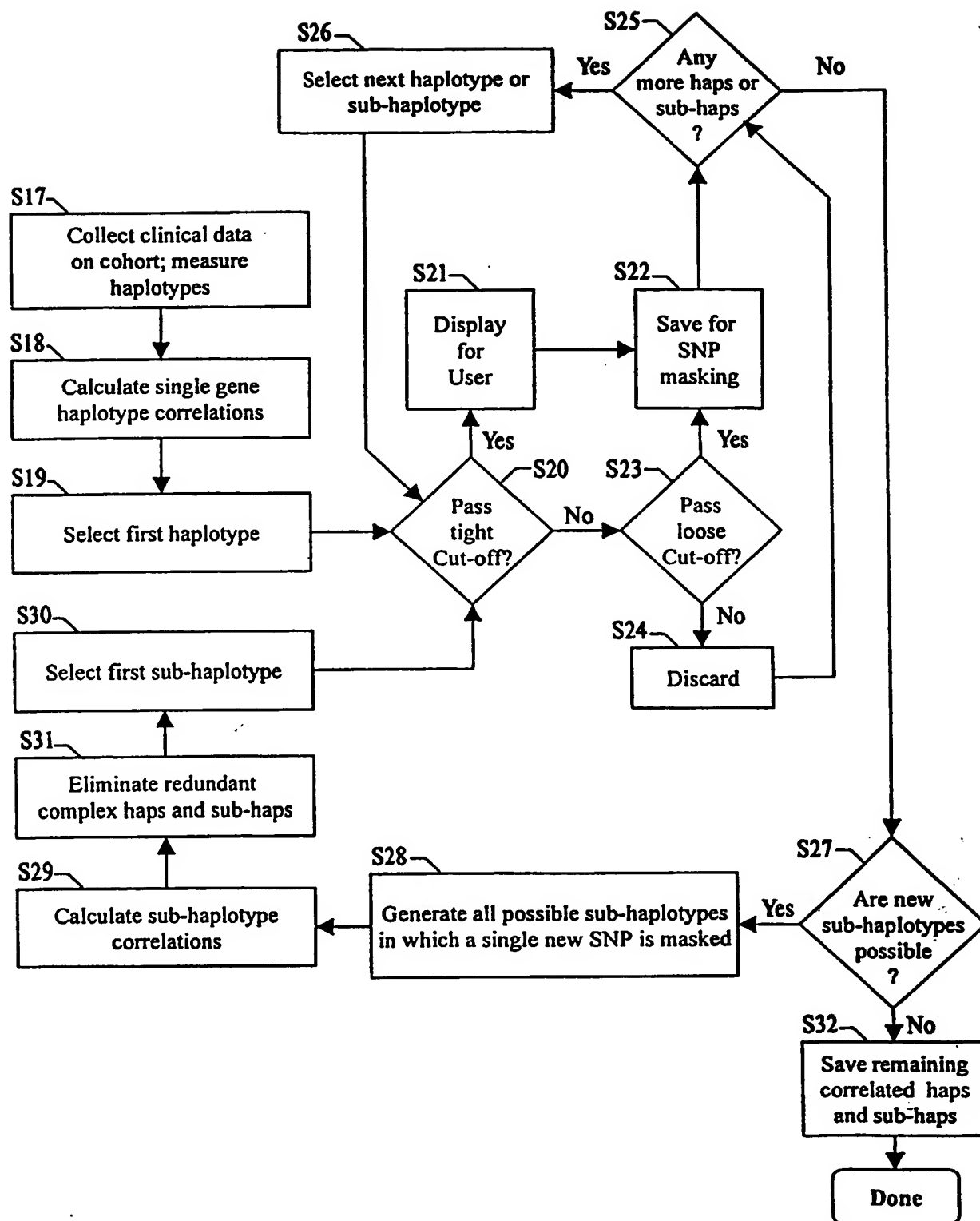


FIG. 46

61 / 62

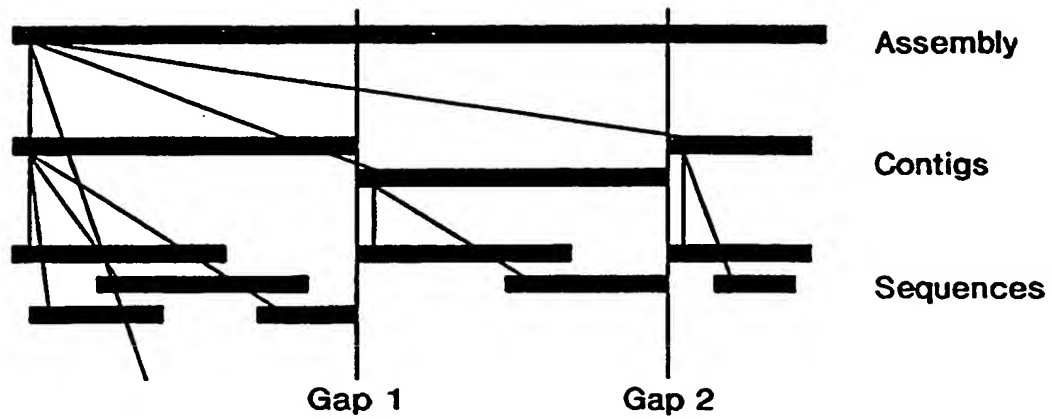


FIG. 47

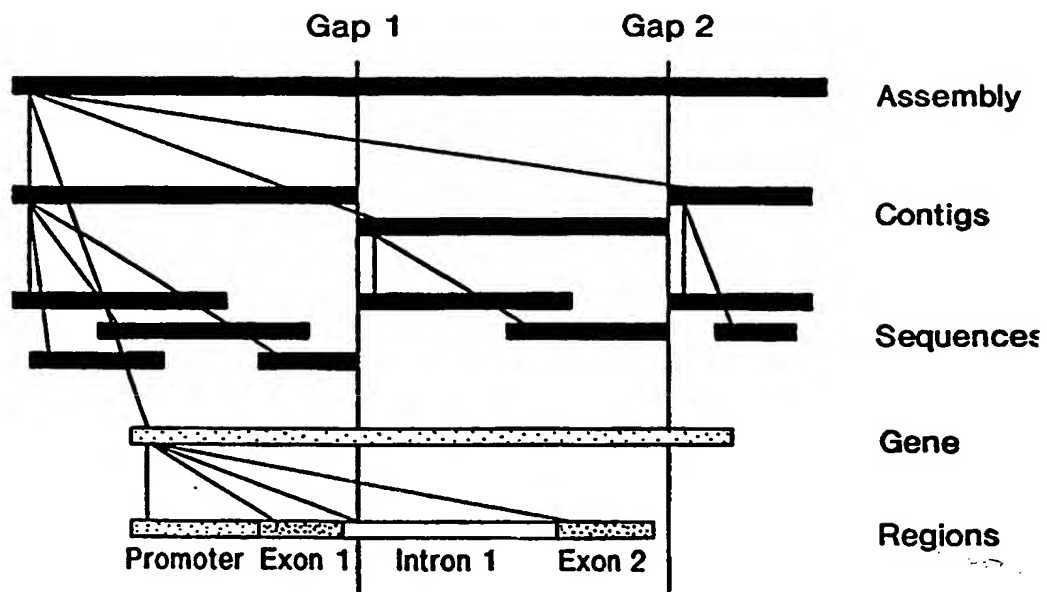


FIG. 48

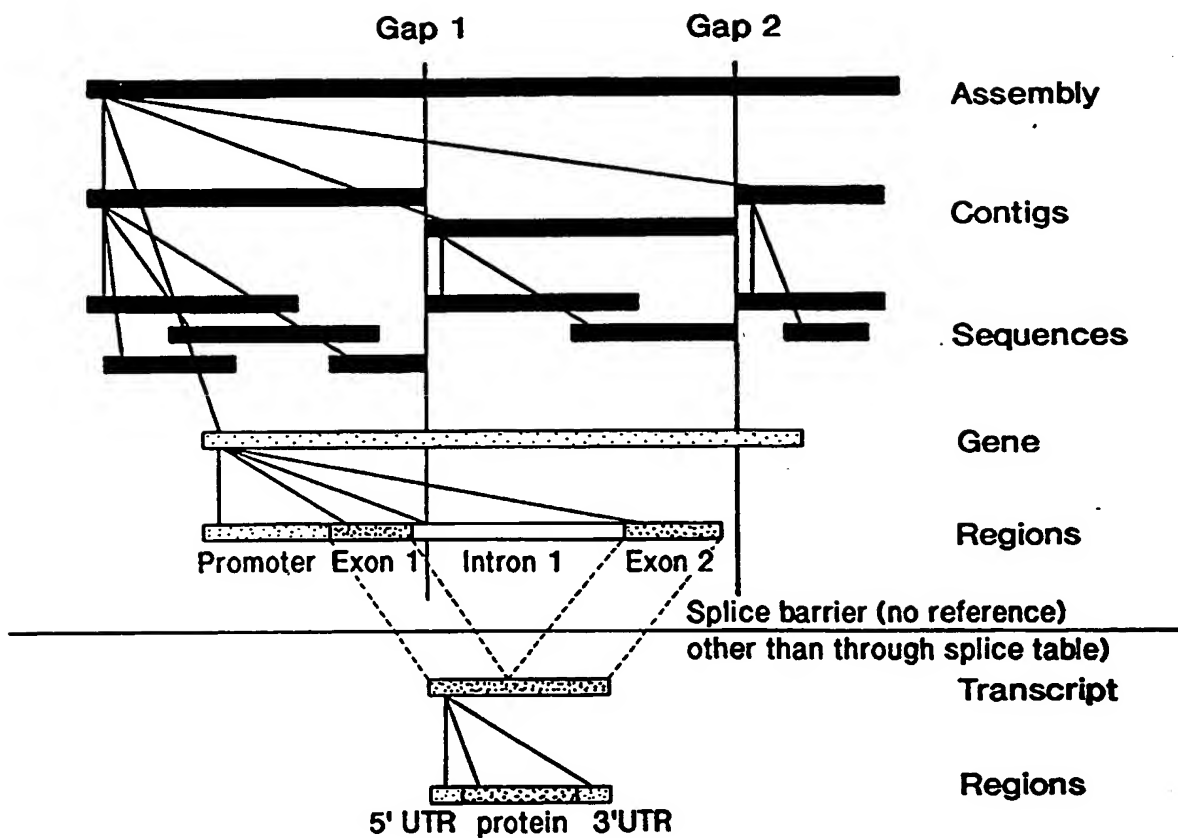


FIG. 49